THE UNIVERSITY OF CALGARY

An Introduction To Indus Writing

by

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A THESIS

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IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE

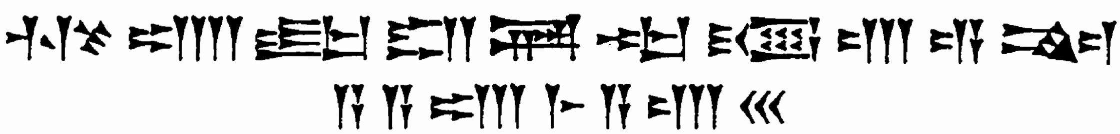
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NAM.DUB.SAR^{RA} *AMA GÙ.DÉ-KE*$_4$*.E.NE A.A UM.ME.A-KE*$_4$*.EŠ*

'Writing is the mother of speakers, the father of scholars'*

G.R. Driver (1976:1)

Abstract

This thesis uses the conjunctive approach to analyze inscriptions of the Indus Valley Civilization (1600-3000 BC), presented in five chapters: Chapter 1 The Archaeology of the Indus Civilization; Chapter 2 Inscribed Indus Artifacts; Chapter 3 Indus Sign List; Chapter 4 Analyzing Indus Inscriptions; and Chapter 5 Reading Indus Signs.

The purpose of interrelating these lines of evidence is to resolve basic issues concerning the cultural and linguistic identity of the Indus (Harappan) people. The internal workings of Indus inscriptions are examined.

I conclude that the Language of the Indus inscriptions has many characteristics of Proto-Dravidian as reconstructed. The subject matter of the majority of texts is economic, and the script is logo-syllabic. Major differences in sign distribitions can be used to identify syntactic elements in Indus texts. The **keviyan* reading in Chapter 5 is used to relate case endings in PDr with specific signs.

Acknowledgments

The process of creating the Indus sign list used in this thesis took many hours of collecting, editing, entering, checking, and double checking all data base entries. The helpful suggestions and long suffering patience of Margaret Thomason of Calgary made the Indus sign list data base possible. Thank you Dr. Radhakrishnan, University of Calgary, Department of Archaeology for your advice on Chapter 5. Cost of thesis production and data input were offset by financial contributions by Neale E. Smith of Douglas, Arizona and by Early Sites Research Society, Inc. (James P Whittall Jr, Director). Thank you Susan Bonten for the loan of your computer which was used in all aspects of thesis research and production. To my mother Hazel who always clipped the archaeology stories from the newspapers and magazines for me, and who helped me through the tough times, thank you. Special thanks to Vladimir and Margaret Markotic for their generous gift of Indus books and articles.

It was a pleasure and an honor to study with Dr. David H. Kelley, Professor *emeritus*, University of Calgary, *Sak Itzat.* Thank you for your help and guidance.

Dedication

for

Vladimir Markotic who got me started

and

David Kelley who wouldn't let me quit

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Chapter 1
Indus Civilization

Introduction

This thesis uses the conjunctive approach[1] to analyze inscriptions of the Indus Valley Civilization (3000 BC to 1600 BC). This material is presented in five chapters as follows: Chapter 1 Indus Civilization; Chapter 2 Inscribed Indus Artifacts; Chapter 3 Indus Sign List; Chapter 4 Analyzing Indus Inscriptions; and Chapter 5 Reading Indus Signs. The purpose of interrelating lines of evidence is to resolve basic issues concerning the cultural and linguistic identity of the Indus (Harappan) people, and the internal workings of Indus script. Each chapter examines a different set of data relevant to the analysis of the inscriptions, and draws conclusions from these data:

Chapter 1: Reviews some important aspects of Indus archaeology, and concludes that seals are found in association with kilns and other areas of specialized production. These associations, in conjunction with the analysis of tags, confirm the economic contexts of seals.

Chapter 2: The typology of inscribed Indus Artifacts presented in this chapter creates more meaningful divisions between artifacts based on functional commonalities. These groupings create comparative sets with internal similarities which are useful in the analysis presented in Chapters 3, 4 and 5.

Chapter 3: The comprehensive grouping of sign variants (allographs) is a necessary first step in the analysis of sign contexts. The purpose of these groupings is to bring together sets of signs for internal as well as comparative analysis. Methods used in the definition of sign variants is critiqued and refinements are proposed.

Chapter 4: Presents an overview of traditional methodological approaches used in the analysis of the Indus texts. Building on this work, Chapter 4 presents an elaborated approach which is more sensitive to variation in sign behavior. Further, this Chapter

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[1] Integrating multiple lines of relevant evidence.

concludes that: 1) The Language of the Indus inscriptions has many characteristics of Proto-Dravidian as reconstructed and that the script is used to write that language. 2) The subject matter of the majority of texts is economic, but different classes of artifacts would probably have different topics. In short, most but not all texts deal with logistical economic matters. 3) The Indus script is logo-syllabic and is comprised of the same components as other ancient scripts, but in an unknown configuration. 4) The inscriptions are most often read from right to left although other reading orders are attested in rare cases. 5) Structural analysis, as formalized in Chapter 4, demonstrates differences in sign inventories and usage between artifact types and sites. 6) Major internal differences in sign distributions can be identified as syntactic elements using structural analysis.

Chapter 5: This chapter shows that it is possible to propose sign readings based on the analysis of inscribed artifacts. These readings must make sense in terms of the expectations raised in Chapter 1 through 4, including the structural constraints of Proto-Dravidian morphology.

The sign list (Table 3.2) as presented in Chapter 3 is essentially an annotation of allographic clusters in the inscriptions. The metric data derived from the sign list can be used in the spatial analysis of signs. This data can also be used to access the inscriptions, as found in the publications of Indus artifacts, and to create analytical subsets for further consideration. Table 3.1 is an abbreviated form of the data given in Table 3.2.

The Archaeology of the Indus Valley Civilization

The Indus Valley Tradition is defined by Shaffer (1991) as all human adaptation in the Greater Indus Region, from around 6500 BC until 1500 BC (Kenoyer 1991a: 342). The Indus civilization is known to archaeologists from about 1000 Indus sites found in an area of some 600,000 to 800,000 km^2 (Possehl 1990) (Figure 1.1). This area

encompasses all of Baluchistan, Makran and Pakistan, and parts of Afghanistan, and India.

The coastal area of Pakistan is a subduction zone geologically and crustal uplift related to tectonic activity has been ongoing through the entire Indus period. Coastal uplift, in conjunction with seasonal flooding has been identified as a major cause of the decline of the Indus civilization (Raikes, 1964). Uplift is also responsible for shifts in drainage patterns within the Indus valley. Indus sites (150+) found along the now dry Ghaggar-Hakra river bed attests to the important impact of these shifts in drainage. Indus sites in the vicinity of Mohenjo-daro would have experienced prolonged periods of flooding as the uplifted crust near the coast would have blocked the course of the Indus river as it flowed to the sea. The details of the geological and hydrological history of the Indus area are not known, but by 1800 BC the de-urbanization of the Indus Civilization was nearly complete. The decentralization of the Indus population was temporally uneven and sites such as Kalibangan and Lothal may have remained viable for several centuries after the abandonment of Mohenjo-daro and Harappa.

Indus sites have been categorized by size. Kenoyer (1991a:349-352) proposes a four tiered system: First Tier >50 ha; Second Tier 10 - 50 ha; Third tier 5-10; and fourth tier 1-5 ha. Major (first tier) sites (n=4) are located about 250 km apart. These sites were linked in a trade network with minor sites sometimes specializing in specific items of production. Mohenjo-daro is the largest Indus site covering approximately 200 ha, although the entire site may not have been in use through all periods. The geographic distribution of the site hierarchy suggests a well developed trade network.

The climate of the Indus valley is influenced by two weather systems--the winter cyclonic system of the western highlands and the summer monsoon system of peninsular India (Kenoyer 1991a:339-341). In the north, summer monsoons and winter rains bring annual precipitation totals of approximately 200 mm per year. In the south, rainfall is

unpredictable and there must have been major differences in agricultural practices between all major (first tier) Indus sites.

The Indus and Ghaggar-Hakra rivers have very different characters with the latter having a much gentler grade. Additionally, there are significant variations in the grade of the Indus river from source to mouth. Consequently, seasonal flooding was more severe at Mohenjo-daro than at either Ganweriwala or Harappa (Figure 1.1). Variations in rainfall and meltwater at its source affect the degree of seasonal flooding along the course of the Indus river.

The existence of predictable seasonal winds allowed Indus traders to sail to Dilmun and Mesopotamia, and evidence for contact with Arabia and Mesopotamia is plentiful. Other, as yet undocumented, connections with the Horn of Africa and Egypt are possible given the nature of the seasonal winds and the distances involved.

Of the evidence for trade between the Indus Valley civilization and Mesopotamia the most interesting is the presence of nine Indus style seals found in various locations in West Asia. These seals are inscribed with Indus signs. These West Asian seals have been closely studied (Gadd: 1932; S.R. Rao: 1973; and Brunswig et al: 1983). Unfortunately, the exact provenance of several of the seals is unknown. For those that remain it could only be said that they were carved sometime around the reign of Sargon the Great, making the Indus civilization roughly synchronic with this period. The presence of Indus seals at Ur, Kish, and other West Asia sites attests to the extent of Harappan trade. "There is direct evidence for the maritime trade between the Indus civilization and Western Asia from the time of Sargon the great (24th century BC) to Ur III and Isin-Larsa dynasties" (A. Parpola 1986: p399). This evidence is mostly in the form of seals. Additionally, there was a single Persian Gulf seal found at Lothal (Rao 1963). Cuneiform texts tell of a place called Meluhha, which has been generally accepted by researchers as the Indo-Iranian borderlands and the Indus Valley (A. Parpola 1986:400;

also see S. Parpola *et al* 1977). According to S. Parpola *et al* (1977) "Several tablets refer to a colony of acculturated Meluhhan traders in Lagash."

The history of the archaeological study of the Indus civilization begins with the British Imperial archaeologists of the 1920s and 1930s who dug vigorously but not rigorously at both Mohenjo-daro and Harappa. In spite of these circumstances, reports of these initial excavations are still the main source of raw archaeological data relating to the archaeological context of Indus Inscriptions (Marshall 1931, and MacKay 1938 at Mohenjo-daro, and Vats 1940 at Harappa).

Marshall's 3 volume report was published in 1931 and gives extensive documentation of his massive excavations at six locations at Mohenjo-daro. These excavations were cut short by the Great Depression, and this is reflected in the quality of the published reports. Marshall gives lists of the most interesting artifacts but find sites (if given) are found in the body of the text which makes them somewhat inaccessible. His list of seals contains only the best specimens, and discussions of stratigraphy are either vague or non-existent.

An altogether better effort was made by MacKay in 1938 with his publication of *Further Excavations at Mohenjo Daro*, which documents his excavations of the DK.G Section of Mohenjo-daro. MacKay's extensive listing of all inscribed artifacts includes provenience to the nearest room and depth below datum. His table is readily matched to the photographs in Volume II and the quality of the photography is much improved over Marshall's. Details concerning inscribed artifacts are summarized in his *Tabulation of Seals* (MacKay 1938:324-391) and accompanying descriptions in Chapter XI. The data provided by MacKay (1938) in his tabulation of seals have several applications. The *Seals by Section* map in Figure 1.2b gives important data concerning the distribution of seals at Mohenjo-daro. It shows that a large proportion of our sample of seals comes from the DK.G Area and that seals are not distributed evenly across the site.

Chapter 2 makes the point that seals and tablets may have different functions, in terms of social behavior, and that these differences are reflected in the inscriptions. Patterns in the distribution of seals through time (Figure 1.4) can be interpreted using a detailed knowledge of the descriptions given in the text of Volume 1. For example, MacKay (1938:43) describes his excavations of the earliest deposits in Block 7 House 1.

> The mud-brick platform, through which it was somewhat difficult to cut, was made of sun-dried bricks of various sizes , one of which measured 11.9x5.8x5 ins. The base of this mud-brick platform was 28 ft. below datum. Below it, a layer of rubble consisting of broken bricks, potsherds and rubbish extended down to 35 ft. below datum; and it was in this layer that most of the finds were made, for the most part broken pottery models of animals. On March 7th, 1931, the sub-soil water which rises and falls with the Indus was reached at a depth of 38.5 ft below datum. On our return in October of the same year for the new season's work, we found that our wide pit was filled with water up to the level -31.9 ft.; and by the end of January 1932, the water had not yet sunk to the level at which we had first reached it.

Archaeological data from these early levels is sparse outside Block 7 (Figure 1.5). Inscribed artifacts are given special attention by MacKay (1938), and this is the largest collection of usable raw data concerning the inscriptions of Mohenjo-daro.

The Early levels of Block 1 are extremely well documented by MacKay (1938:44) and his observations are often important:

> I have already stated that water level was reached at 38.5 ft. below datum, but from 35 ft. downwards a layer of stiff clay with occasional pockets of grey sand is clear evidence of a flood. It is, however, impossible to estimate the depth of the deposit left by this inundation, for it certainly extends well below the lowest water-level of the present day. The subsidence of the little building described above is in itself proof of the occurrence of a flood of contemporary date, which clearly was the reason for the construction of the overlying platform of sundried bricks before further building in this quarter was attempted.

The deep excavations of DK.G Area were limited to the area immediately surrounding Block 7, and this included part of Block 1. MacKay's data can be used in conjunction with other data to examine the distributional characteristics of artifacts. The maps in Figure 1.4 show two major trends: one is a measure of clustering (legend bar graph), the other is the locations of seals by house. Figure 1.4 a has an obvious clustering

of seals in Houses 1 and 2 of Block I. This is the area at the center of MacKay's "wide pit". Seal frequencies here are elevated by virtue of the depth of excavation at this point and the fact that these houses are foci of seal concentrations in several stratum of the DK.G area.

MacKay gives the depth of all building platforms and foundations in his discussion of the house by house description of his excavations. He relates these to the Periods and Phases proposed by Marshall (1931), but he argues (1938:1-6) for a different placement of the Period boundaries based on the relationships between architectural features, and evidence of inundations (Figure 1.3).

The decentralized pattern given in Figure 1.4 b is probably more representative of the large scale pattern of seal distribution (even for the earlier period). The locations of thick mud brick walls, lanes, and other features suggests that there were two types of building clusters. The first of these consists of buildings of various sizes associated with a courtyard and enclosed by a thick wall (Block 1 and 7, Figure 1.5). Four of the five concentrations of seals in Figure 1.4 b are associated with this first class of building cluster (compound). I would suggest that these compounds are controlled by social groups involved in specialized craft production. The basis of this social unit cannot be determined at present, but kin based systems seem the most probable given what is known about the organization of other ancient cultures and of later cultures in this region. Kilns in use during this period (III) in the DK.G Area are found in association with the courtyards of enclosed compounds.

The second class of building group consists of rows or clusters of buildings with near identical shapes, sizes, and plans. These row houses are not associated with courtyards and enclosing walls. This simple dichotomy accounts for most of the buildings in the DK.G Area of Mohenjo-daro. None of the seal concentrations in Figure 1.4 b are associated with this second class of building cluster, although seals are found in row houses too.

When examined in detail, artifact distributions show clustering of seals and weights. One example of this type of clustering can be seen in DK.G, Block 7 (Figure 1.6). This western portion of this block contains four kilns in Period IV (Figure 1.5, points 21, 28, 29, and 42). The largest of these (29) is built in the demolished western half of Block 7, House IX. The western section of Block 7 consists of House I, II, VIII, and IX, and there are 44 seals found in these buildings. Other concentrations are found in House V (18) and House III (14), but it is unclear whether these two sets are part of a single cluster or if either is associated with point 29. An additional 18 seals are found in the area just north of point 29 which are most likely associated with either point 29 or points 21 and 42. The distribution of Indus weights is simpler. Of the 24 weights in Block 7, 19 of these were found in the western four houses (I, II, VIII, IX). Within House II the weights cluster in Room 89, while seals are most concentrated in Rooms 88, and 89. Access to House II is limited to a single door in Room 29 which connects House II with House IX, and the kilns at points 28 and 29. Running west from House IX is Long Lane, and running South then East is Fore Lane. These lanes intersect at House IX connecting the kiln area with First, Center, and West Streets. House IX is the hub of these alleys which radiate to connect with other alleys and main thoroughfares.

Block 10 (and Block 9, House VII) is situated immediately West of Block 7, House IX. These buildings consist of a well room (House II) and associated row houses (I, III, and IV). This pattern of enclosed building clusters with associated wells, kilns, row houses, work areas, and administrative buildings is repeated in other areas of Mohenjo-daro.

From these early digs to the more recent work of Dales and Kenoyer in 1990s there has been no major publication of excavations at Indus sites. This is not say that no worthwhile archaeology has been done between Marshall and Kenoyer, only that this work was either reanalysis of the early excavations or journal summaries. As Kenoyer (1991a:333) points out:

> In recent decades, most studies of Indus civilization have been carried out through institutions in Pakistan and India, with continued involvement of foreign scholars (see bibliography). Various paradigms have now been established (Dyson, 1982; Jacobson, 1979) and theories of migration and diffusion have been replace by models of regional interaction (Chakrabarti, 1977) and indigenous development (Durrani, 1986; Jerrige and Meadow, 1980; Mughal 1974b; Shaffer, 1982b).

Rao's 1973 report of the excavation of Lothal supplies no raw data, although Rao's observations and conclusions are informative about Late Harappan frontier sites. Additionally, his excavations supply us with the largest collection of tags (Type N and O) from a single Indus site, and detailed information regarding the organization of specialized production. The Indus inscriptions may annotate either destinations of shipments of goods and/or descriptions of the goods to be transported, or both of these. Evidence for this comes from the seal impressions from Lothal. Many of the seal impressions at Lothal have impressions of a coarse cloth on their reverse sides. The sheer numbers of tags from Lothal indicate these objects were in common use. Lothal had a wharf, workers barracks, an elite residence and a bead factory. This is essentially the pattern described for Mohenjo-daro, but at a much smaller scale.

Published archaeological data has been supplemented most recently by the 1986-1990 excavations of Harappa (Dales and Kenoyer 1991, and others). This publication (Meadow 1991 (ed.)) gives the first processualist led (Dales *et al* 1977, 1986, 1990, and 1991; and Kenoyer 1991a, 1991b) multi-disciplinary excavation of a major Indus site. These reports make available the first comprehensive forensic and faunal data as well as studies of craft specialization and trade. Kenoyer (1991b:364) tells us that inscribed artifacts were found "...along major access routes and main streets" at Harappa. Yet Belcher (1991:109, fig. 8.2) found 10 inscribed artifacts in his 5 m by 10 m unit at Mound E, Area C, of Harappa. This unit exposed a work area around a kiln.

Damage to Indus sites is significant and widespread. Mohenjo-daro and especially Harappa have served as sources for baked mud bricks both for local people and for the construction of British Indian railways. At Harappa brick robbing has removed

most of the late deposits. At Mohenjo-daro the high water table prevents excavation of the earliest deposits. These circumstances leave us with incomplete sequences at both sites. Further, there are large gaps in the sequence for which there are no archaeological data. For this reason the chronology of the Indus Tradition is somewhat disjointed and chronological models are necessarily general (Figure 1.3).

Research into the nature of the Indus script over the last 25 years has examined many aspects of the script including its structure, and the possible linguistic identity of the people who inhabited the Indus Valley before the Vedic age. Most researchers, for various reasons, have assumed that the language of the script was some early form of Dravidian.[2] This is by no means the only solution to the question of root language, but given present evidence it does seem the most viable solution. Zvelebil (1972b), McAlpin (1981) and others (Parpola 1994; Fairservis 1992; and Knorosov 1968) present linguistic, historical, and archaeological evidence supporting the Dravidian solution, while Hemphill *et al* (1991) present metric and non-metric analysis of the human remains from Harappa that agree in general terms with the linguistic, historical, and archaeological data.

Earlier models of invasions of Vedic Aryans (Wheeler 1959; Piggott 1952) have not survived recent research. These models relied heavily on accepting specific sets of data (the massacre in Deadman's Alley Mohenjo-daro) as support for the Aryan invasion model. As more details of Indus prehistory were published it became evident that these models were conceptually too simple. Additionally, increasing control of the chronology and archaeology has made it clear that the coming of the Aryans was 500 or more years after the end of the Integration Era (Table 1.1). During this period (Localization Era) the population density of the Indus valley was much reduced due to deurbanization of Major Indus centers. Cultural development was diverse with localized styles and technology developing along distinct trajectories. The Indus civilization had long disappeared when the first Vedic horsemen arrived to stay in the Indus valley.

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2 see Chapter 4.

A recent summary of Indus valley archaeology is Kenoyer's (1991a:331-385) article 'The Indus Valley Tradition of Pakistan and Western India' which suggests a general chronological frame work for the development of the Indus civilization. The chronology of the Indus Valley Tradition as given by Kenoyer (1991a:333) is summarized in Table 1.1.

Table 1.1 Chronology of the Indus Valley Tradition.

Indus Tradition	
Localization Era	1900 to 1300 BC
Integration Era	2600 to 1900 BC
Regionalization Era	ca. 5000 to 2600 BC
Early Food Producing Era	ca. 6500 to 5000 BC

A chronological model can be created using several lines of evidence. This model would have Proto-Dravidian speakers moving to the Indus Valley from the Iranian Plateau between 6500 BC and 4500 BC. Archaeological evidence for this early occupation of the Indus Valley comes from the site of Mehrgarh (ca. 6000 BC). Material excavated from aceramic deposits (pre 4500 BC) at Mehrgarh include six-row barley, einkorn, emmer, and durum-bread wheat (Costantini: 1984). Later levels show an increase in wheat utilization, and the introduction of ceramics and other technological innovations which lead from the *Early Food Producing Era* (pre 5000 BC) to the *Regionalization Era* (5000 - 2600 BC) of the *Indus Tradition* (6500 - 1300 B. C.) (Kenoyer, 1991a:341).

The process of regionalization results in the *in situ* development of regional variations of Indus culture. This process includes increasing urbanism, social stratification, craft specialization, inter and intra regional trade, and a reliance on agriculture. There is a corresponding decrease in regional variations in cultures over time. These trends culminate in the *Integration Era* (2600 - 1900 BC) with the establishment of recognizably *Indus* culture (Harappan Phase) including state level

organization and writing. The excavated deposits at Mohenjo-daro all date to the Integration Era or later.

The Indus tradition (Harappan Civilization) is recognizably distinct from contemporaneous West and Southeast Asian cultures, and represents an *in situ* development over 4000 years. That is not to say that the Indus tradition developed in isolation. There is ample evidence for contacts between Mesopotamia and the Indus valley from the time of Sargon (c. 2300 BC), if you accept the equivalence of the Indus valley and Meluhha (Parpola, 1994: pp. 12-15). The fact that all references to Meluhhans in Akkadian texts give them Sumerian names may point to even earlier contacts between these two areas.

According to Hemphill *et al* (1991) following the Chalcholithic settlement of the Indus Valley (6000 - 4500 BC), there is a long period of biological continuity which lasts (at Harappa) until between 800 and 200 BC. The biological model suggests that, following the end of the Indus Tradition (c. 1300 BC), there was a period of continuity in human populations at Harappa which was not interrupted until after 800 BC. The population discontinuity is likely related to the arrival of the genetically different Indo-European speaking Vedic people. The fact that the biological model presented by Hemphill *et al* (1991) and the linguistic model proposed by Zvelebil (1972) and others agree so closely lends credence to both lines of evidence.

Similarities between the dress of anthropomorphic figurines between Harappa (Dales, 1991:67) and Mohenjo-daro (MacKay: Plate LXXV) suggests a level of ethnic uniformity between the northern and southern Indus Valley. Other practices are geographically more restricted.[3] This fact demonstrates that while there were significant pan-Indus similarities in material culture, there were distinct regional characteristics. These differences suggest that the Indus culture was dynamic and adaptable to different

[3] Type G artifacts (Figure 2.1: Bas Relief Tablets) are most common at Harappa, while Type J artifacts (Copper Tablets) are found only at Mohenjo-daro.

environmental and social circumstances, and these differences may include regional dialects of Proto-Dravidian.

Figure 1.1 Indus Region and Indus Texts By Site

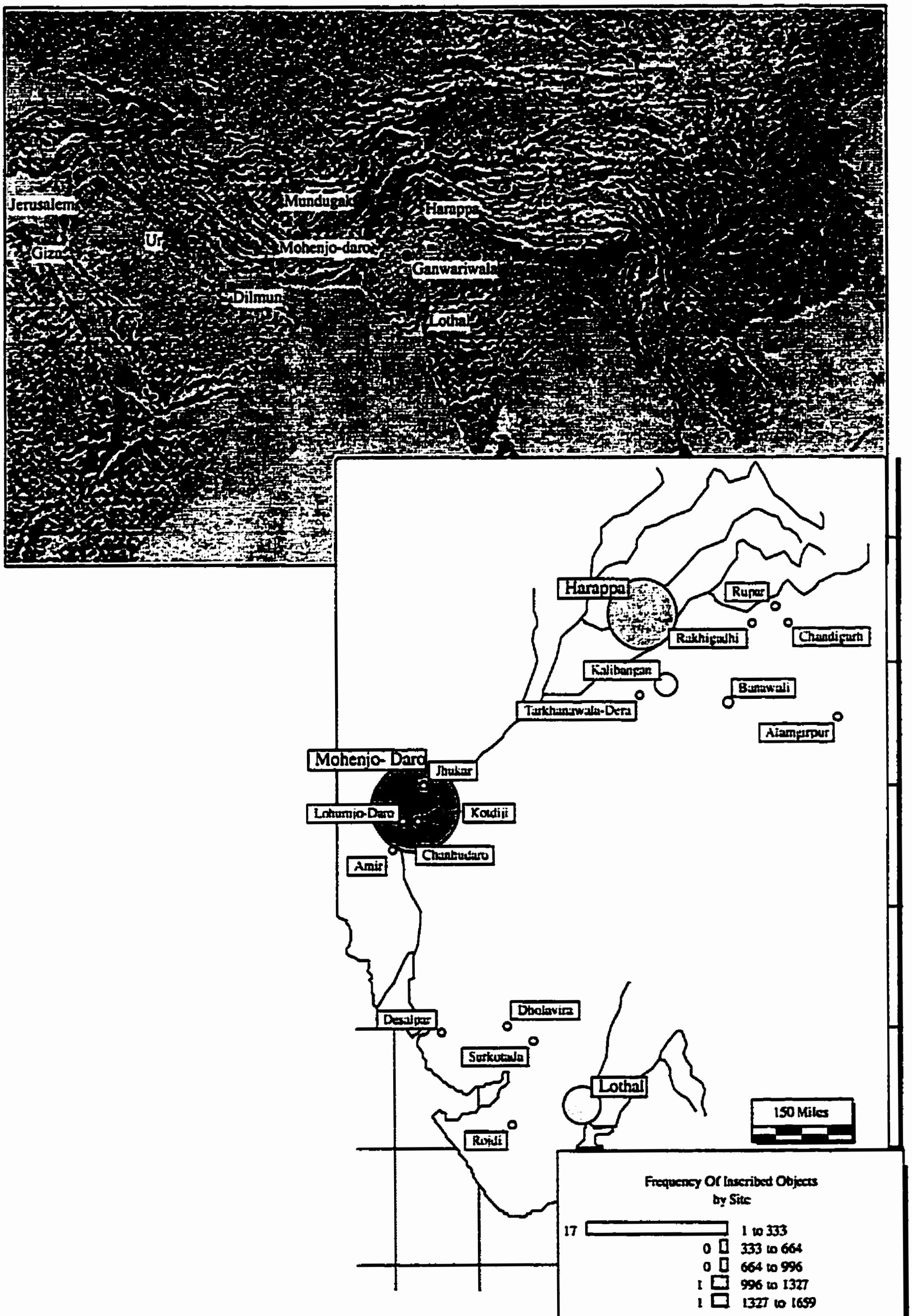
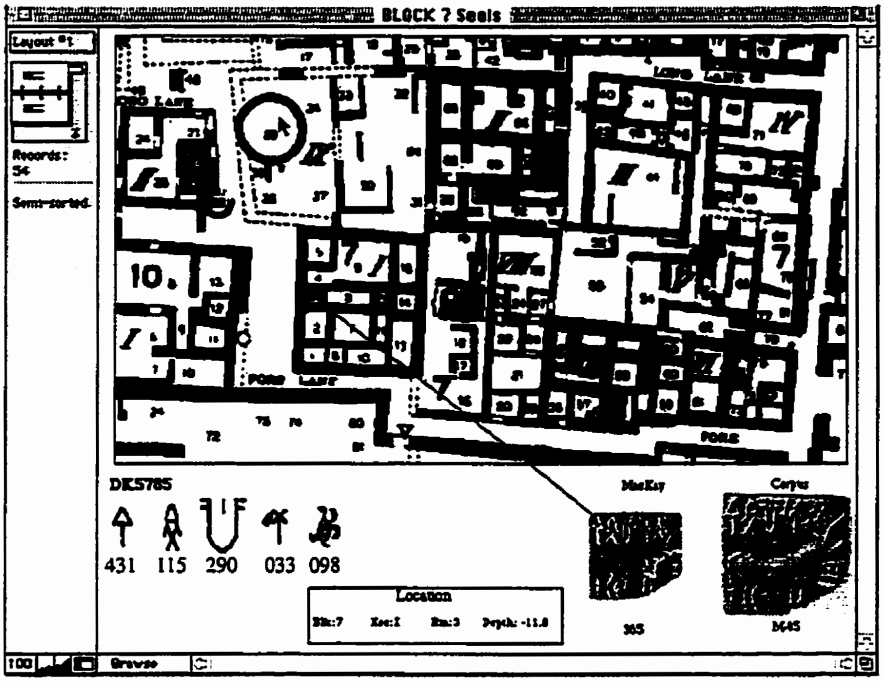


Figure 1.2 Some Applications For Data From MacKay 1938

a. Relational Data Base of Inscribed Artifacts DK.G



b. Geographic Information Systems

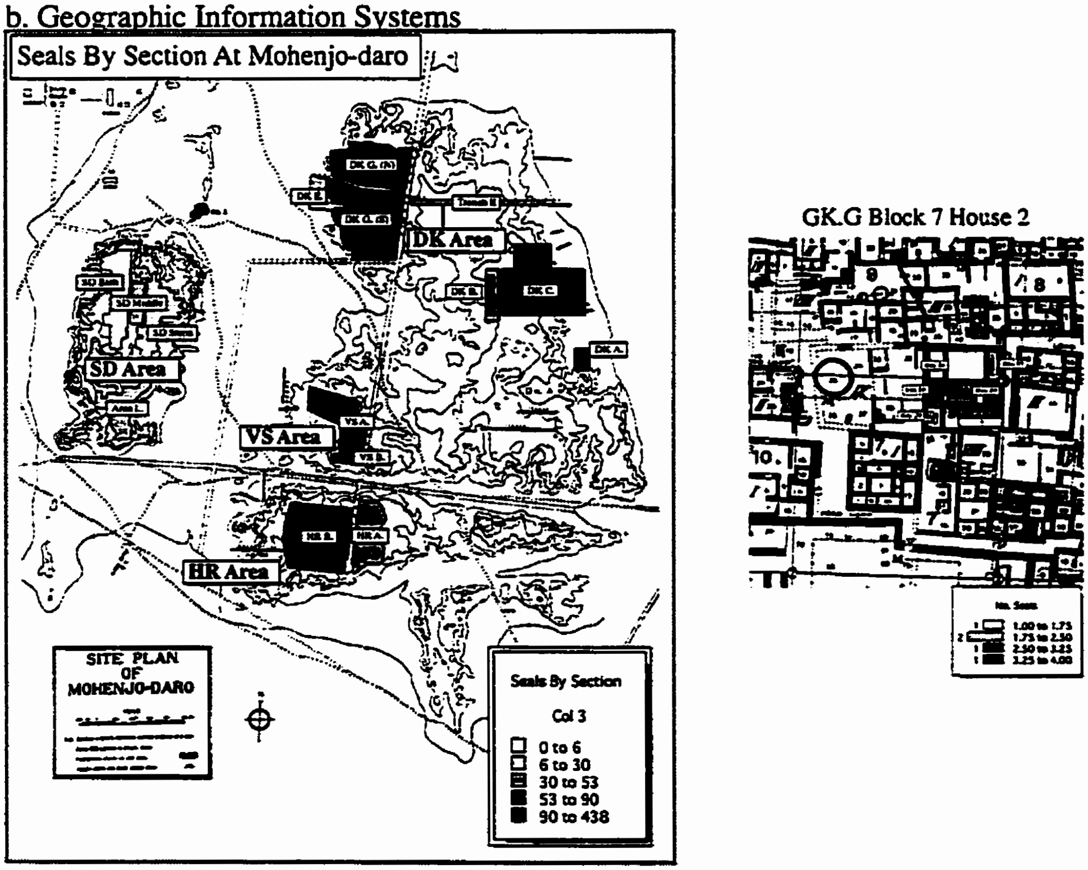


Figure 1.3 Chronological Table

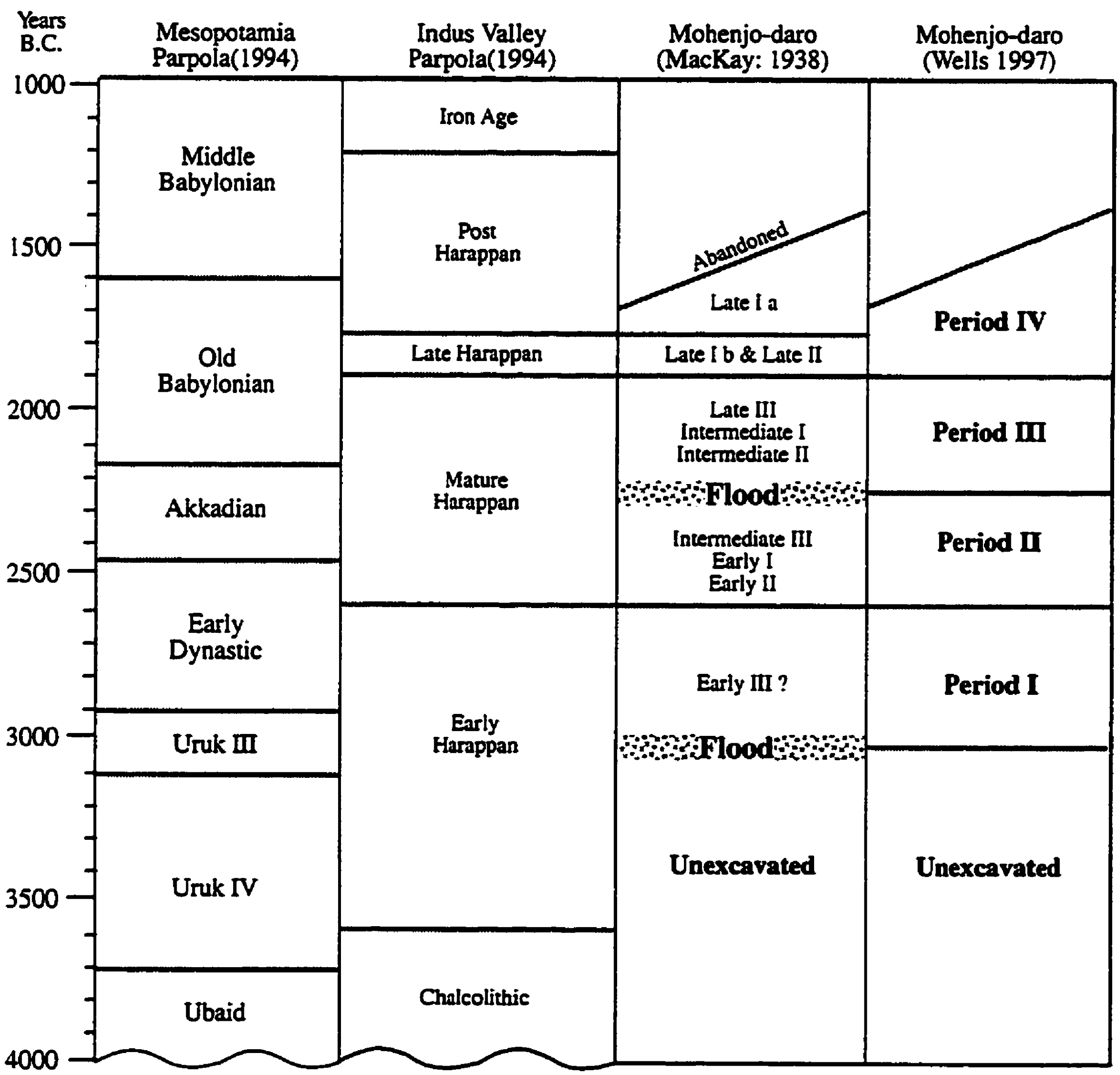
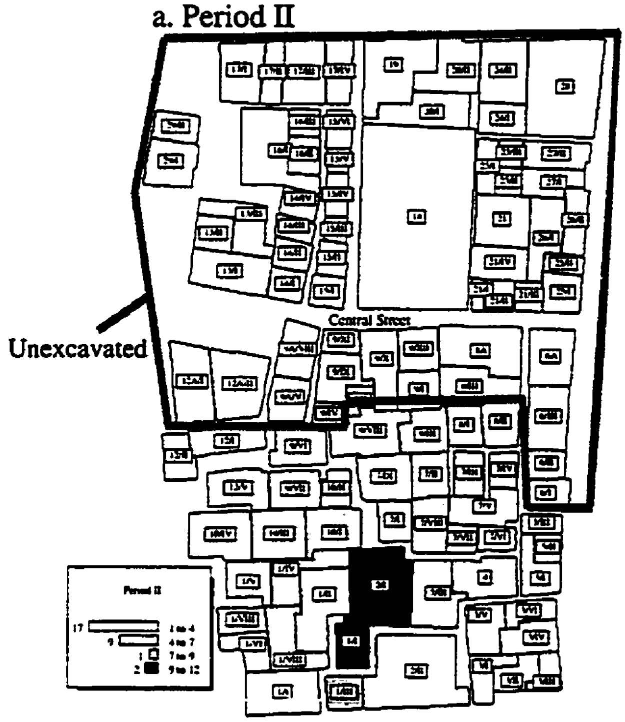
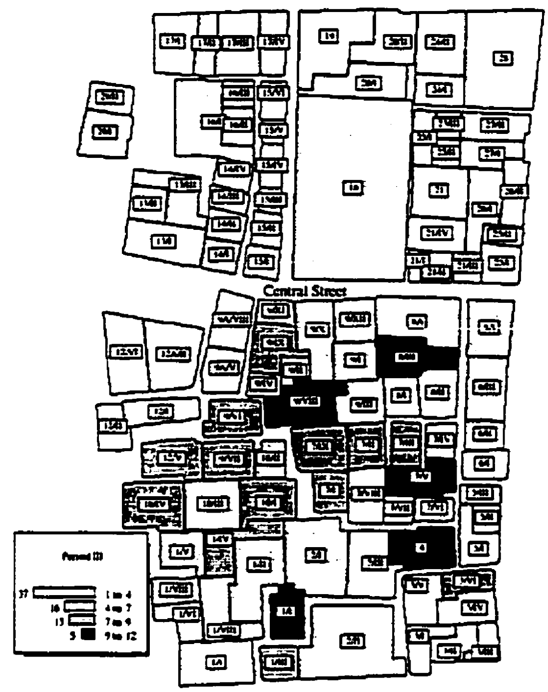


Figure 1.4 The Distribution of Seals For DK.G Area Mohenjo-daro

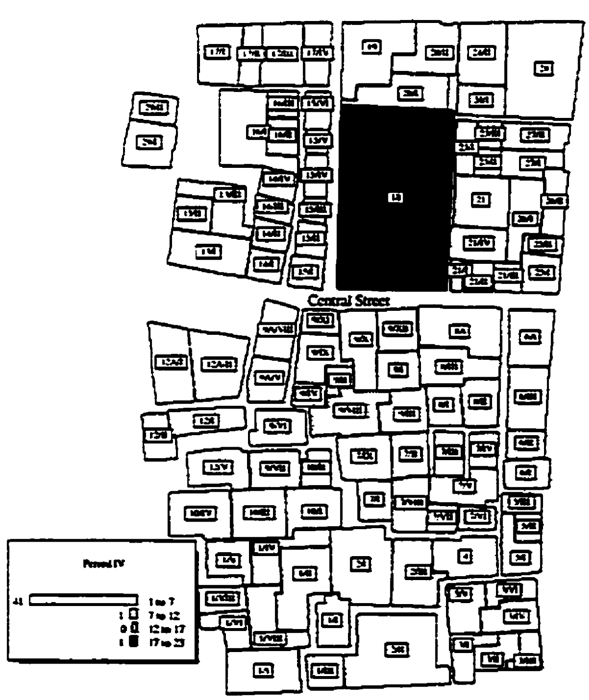
a. Period II



b. Period III



c. Period IV



d. All Seals

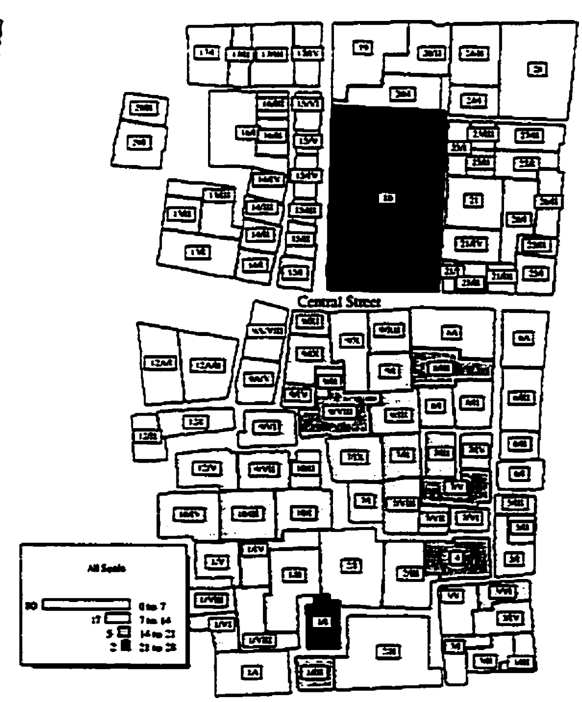


Figure 1.5 Period IV Architecture--Mohenjo-daro, DK.G, Block 7 Vicinity.

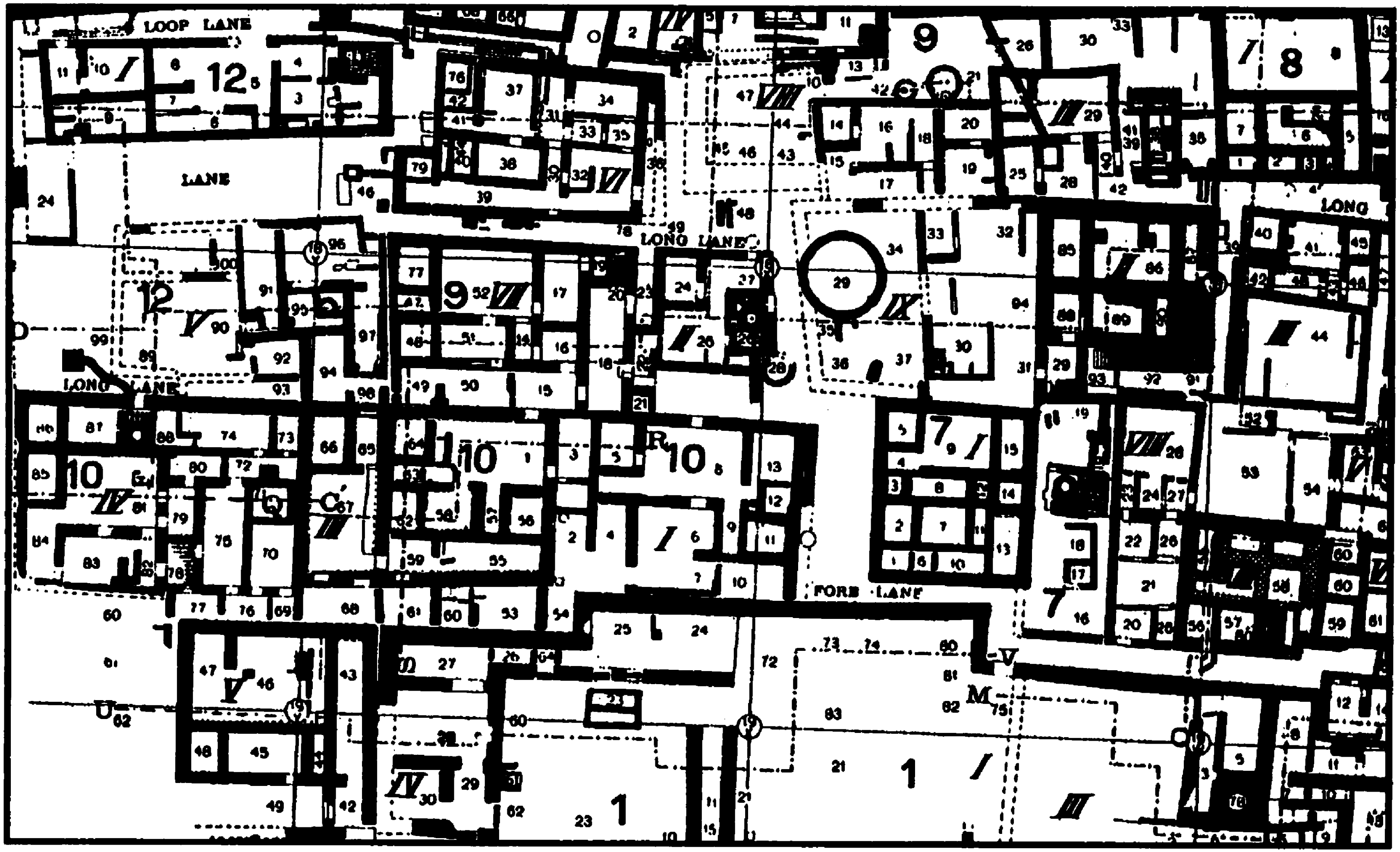
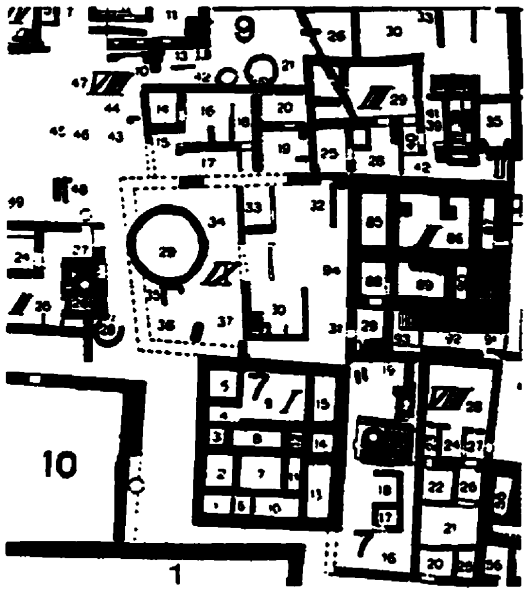
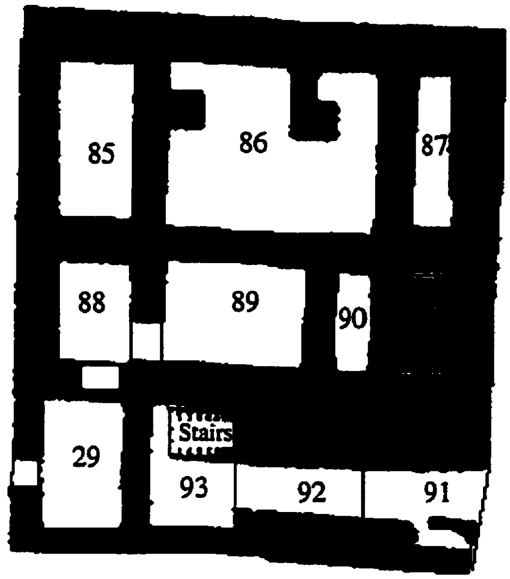
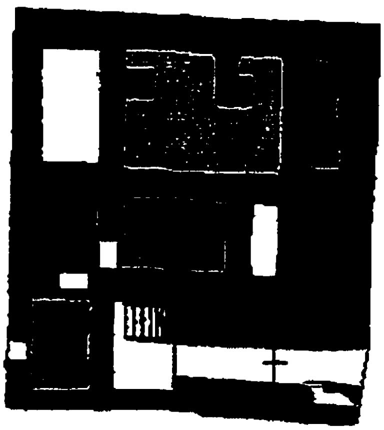


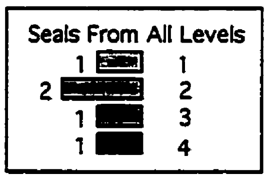
Figure 1.6 Seals and Weights From DK.G, Block 7, House II

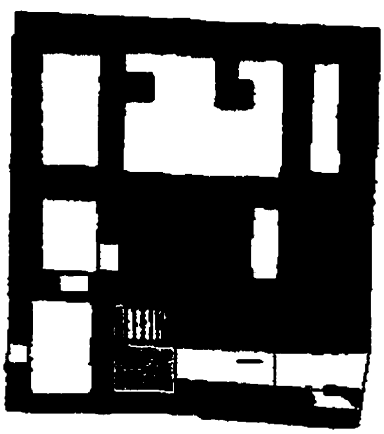


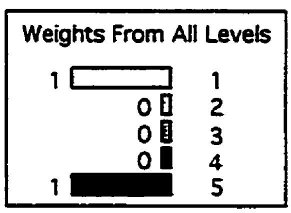
House II











Chapter 2

Inscribed Indus Artifacts

Introduction

The history of the development of typologies as tools of archaeological investigation has been tied intimately to adoption of new theories and methods in archaeology. It is not my purpose here to examine this development in detail, but rather to discuss more directly the nature of typologies and how they are applied to archaeological material.

Archaeologists have used typologies since Montillius. From its early beginnings the creation and use of typologies has gone through many changes. Approaches have ranged from numerical taxonomies (Sokal and Sneath 1963) to the dialectic approach proposed by Adams and Adams (1991). The major goal of this work has been the creation of a method for classifying material cultural remains satisfactorily. Analysis of the archaeological record using these typologies has addressed concerns from many theoretic orientations, and yielded varying results. Theoretic and methodological considerations of classification, typology and taxonomy have overshadowed practical concerns of utility since the birth of the New Archaeology.

On a more fundamental and human level we all use typologies to organize things around us. We classify, without much formal consideration, objects as different as doves and eagles as birds. This process of generalization is the key to childhood learning. The ability to identify objects and classify them is fundamental to the way in which we view our world. Another aspect of classification is differentiation. We would all differentiate between a wrist watch and a bell tower clock, while recognizing them as functional equivalents. The degree to which we generalize or differentiate is dependent on the context of reference.

These two principles are diametrically opposed ends of the continuum of the context of reference. We classify all things within our realm of experience and reference

them, as contextually appropriate, along this continuum. Classes of objects are culturally determined and internalized during language acquisition. Differences exist between individuals and between cultures. Archaeologists have long recognized one of these differences and commonly classify themselves as lumpers or splitters depending on their own predisposition. Variations also have spatial and temporal distributions. To further complicate the classification of artifacts, differences in site formation processes and the biased nature of our own cultural milieu must be considered.

Given these circumstances it is difficult to imagine a method which could be used to classify archaeological remains in terms meaningful to understanding those who left them. While each person has a slightly different set of internal classifications for culturally common objects, at a coarser resolution these differences are minimized. To what degree variations in the archaeological record can be related to the variations in the perception of material culture by past peoples has always been a central concern of typologists.

The Ford/Spaulding debate of the 1950's centered on whether or not types within material culture remains could be discovered from their own unique characteristics, or whether we should impose our own arbitrary types on our data. This over simple description of the Ford/Spaulding debate is worthy of some elaboration, with one statement from each camp:

> The degree to which cultures allow variation in patterning varies widely from one culture to another; at different times; and from one aspect of the culture to another. Ford (1953:391)
> The major purpose of my paper was to explore techniques for discovering consistent and well defined *behavior patterns*, and if the techniques actually do what they are supposed to do they can not fail to yield historically useful units. Spaulding (1953:392)

Spaulding (1953), Rouse (1960) and others have in part inspired the new archaeology and the quantitative generation of multivariate computer analysis and electronic data bases, which dominated the literature of the 1970s and 80s. Among these

Christenson and Read (1977) stand out as the most austere. However, the new archaeology found its most explicit expression in *Essays On Archaeological Typology*, edited by Whallon and Brown (1982). Here the application of statistical techniques dominates. Papers by Spaulding and by Hodson extol the use of attribute-association vs. object clustering techniques respectively, while Cowgill's paper compares the pros and cons of such methods.

Yet in spite of this comprehensive set of papers, the sum of their agreement amounts to the following definition of type as: "... a group or class of items that are internally cohesive and separated from other groups by one or more discontinuities " (Whallon and Brown 1982:.xvii). The most important contribution of this work (in the editors' opinion) was that it made: "... some fundamental lines of disagreement explicit ... and highlighted: the role of such differences in shaping approaches and methodologies in this subject." (ibid). Adams considers this debate a false dichotomy in that:

> All types are essential in the sense that they are objectively definable, but instrumental in that we would not retain them if they did not serve some purpose; most of them are based to some extent on initial gestalts that are subsequently objectified by rational analysis...and they have usually evolved through continual dialectic, or feedback, between induction and deduction, object clustering and attribute-clustering, lumping and splitting. (Adams,1988:45)

So it seems that while we all use types and typologies in our everyday lives, the explicit description and definition of the typological process is more elusive. Adams and Adams (1991:5) argue: " It is therefore impossible to talk about types and typologies except in subjective terms. We cannot speak of the concept but only our concepts."

Inscribed Artifact Types

The Indus civilization has left us no long monumental inscriptions, nor have Indus books been found. Inscribed Indus artifacts are limited to small palm sized objects bearing images and signs in the Indus script. Inscriptions are one to fifteen signs in

length and can be found on one or more sides of the artifacts. Seals are most commonly made of steatite, while bas relief tablets (BRTs) are normally of faience[1] or pottery (MacKay 1937:350). On the grossest level, inscribed artifacts can be divided into four groups: Seals, Tags,[2] Tablets, and Miscellaneous Objects (including ceramics).

In this chapter, inscribed artifacts are classified into *groups* (4) and *types* (31) (Figure 2.1). The purpose of this typology is to group artifacts which may have had similar or related uses in antiquity. Further consideration of the images and inscriptions is necessary to judge the way in which types are related. For example, the bas relief tablets (Type G) are divisible into ten (a-j) sub-types. Each sub-type has a distinct characteristic that separates it from other tablets. Type G.e artifacts are rectangular baked faience, smaller than 2 cm by 6 cm, with single occurrence inscriptions and/or iconography on the obverse and reverse sides. Some characteristics such as material, boss type, and inscriptional content cut across the Types defined below. Many Tablets bear the V sign and one to four | signs. This sequence repeats on other types of artifacts at both Harappa and Mohenjo-daro, including Type G, Type H, Type I, Type J and Type K (Figure 2.3).

The intersection of types based on inscriptional content needs to be recognized and considered in addition to the physical shape of the artifact. Using the presence of sign sequences as the only defining criterion to separate types splits artifacts that are identical in all other respects and combines artifacts with nothing else in common. Therefore, it is desirable to identify artifacts which share parallel inscriptions and analyze them in terms of their artifact types. When considering tablets, this process is complicated by the existence of mold made tablets, which are all identical. Artifacts with signs on more than one side may match other artifacts with one side inscribed but not the

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[1] Marshall (1937: 576-7) describes faience as a coarse paste with a greenish glaze. Chemically it is 58% silica and 28% magnesia. A related material *vitreous paste* is distinguishable by its fine grain silica and the absence of Magnesia visible in faience as black specks.

[2] Both BRTs and Tags are baked seal impressions but the Tags are not mold-made. They are commonly roughly shaped chunks of burnt clay with seal impressions on the obverse and textile or reed impressions on the reverse. Unlike BRTs, Tags are usually fired accidentally.

other. Artifacts with a sign sequence including V and one to four | signs need detailed discussion as a group of inscriptions with a special extra-typological relationship. The existence of parallel inscriptions from different artifact types points to a possible connection in artifact function. The detailed typology outlined in the following sections allows the identification of specific functional contexts of inscriptions.

Artifacts which are mold made are typed using a combination of physical shape and inscriptional content. Molded artifacts come in a variety of forms (Type I, Type G.f, and Type G.d).

There are significant variations in the geographic distribution of inscribed artifacts and in the motifs carved upon them (Table 2.1). These patterns are discussed where appropriate as part of the description of types. The following table gives the percentage of all inscribed artifacts for a specific site broken down by Type as present in the photographic corpus.

Table 2.1 Proportions of Inscribed Indus Artifacts by Site By Type

Type	Description	Mohenjo -daro	Harappa	Lothal	Kali -bangan	Chanhujo -daro	Banawali
Type A	Square Seal	57.37	40.18	24.04	44.19	76.19	51.35
Type B	Square Seal	0.42			0.78		
Type C	Rect. Seal	10.14	7.61	15.68	3.88		5.41
Type D	Design Seal	2.72	2.21	3.14	1.55		2.7
Type E	Cylinder Seal	0.18				2.38	
Type F	Round Seal	0.3		0.35	0.78	4.76	
Type G	BRT	7.48	28.67				
Type H	Incised Tablet	0.54	17.35		9.3	4.76	2.7
Type J	Copper Wafer	14.43			5.43		
Type K	Utilitarian Objects	5.86	3.89	24.39	25.58	11.9	35.14
Type M	Ivory Rods	0.18					
Type N/O	Tags	0.36	0.09	32.4	8.53		2.7

Lothal stands out from the usual pattern of Type A seals being the sole dominant form. Type C seals are unusually abundant from this site, being twice as common (36.29% of all seals) as compared to either Mohenjo-daro (14.35%) or Harappa (15.22%). This shift may be related to the relatively late date of Lothal or may reflect a regional

variation in seal usage. Other possibilities are that the Cult and Field objects[3] mark ownership or place names. These possibilities makes sense in that there are significant variations in the design of both Cult and Field objects (Figure 2.2 and 2.4). Tags are also very abundant at Lothal (32.40%). Harappa has a large number of Type G, Type H, and Type J artifacts (Tablets). These locally common artifacts are present at other sites, but represent a relatively small percentage of the total artifacts outside these areas of concentration.

This typology defines sets of artifacts that have similar physical form, assuming a linkage of artifact form and artifact uses in antiquity. The hope is that their inscriptions are concerned with similar topics and will share parallel structures. These parallel structures are the subject of Chapter 4. Thus, this typology is the first step toward the structural analysis of the Indus inscriptions.

Seals

For the purposes of this discussion a seal is defined as any artifact with an intaglio[4] inscription or design. The implication is that all these objects were used to make impressions, and that these impressions were subsequently read. Seals can be made from a variety of materials. The most common materials are: steatite, faience, vitreous paste, and silver.

The vast majority of inscribed artifacts come to us from the early excavations carried out by the Archaeological Survey of India. MacKay (1938: 325-326) follows Marshall's (1937) typology for the seals excavated from the DK.G area at Mohenjo-daro. Marshall's typology represents the first effort directed at identifying and classifying seals. Table 2.2 gives the combined tallies of seals within Marshall's system for the 1927 to 1931 excavations at Mohenjo-daro:

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[3] As defined in the following sections labled 'Cult Objects' and 'Field Objects'.

[4] carved in negative image.

Table 2.2 Seals excavated from Mohenjo-daro 1927 to 1931.

		MacKay	Marshall	Total
(a)	Cylinder seals	2	5	7
(b)	Square seals with perforated boss	558	328†	886
(c)	Square seals with no boss	12	12	24
(d)	Rectangular seals with no boss	17	6	23
(e)	Button seals with Linear designs	9	22	31
(f)	Rectangular seals with perf. convex back	81	64	145
(g)	Cube Seals	3	5	8
(h)	Round seal with perforated boss	1	3	4
(i)	Rectangular seals with perforated boss	2	1	3
(j)	Round seal with no boss	1	1	2
	Totals	686	447	1133

†Marshall's "perfect specimens" (Marshall, 1937: 372).

The main drawback of Marshall's typology is that it ignores the seal's design elements, and focuses on the seal's handle (boss) instead. This approach places Type B seals and Type A seals in the same category. This grouping is unacceptable given the difference between these types. Other attempts (Shah and Parpola 1987; Joshi and Parpola 1991) at classifying inscribed artifacts have likewise focused on the shape or handles of the seals, while ignoring the faces of the artifacts.

Seals were used to make impressions in wet clay as a means of sealing shipments of goods (Kelley and Wells 1995). We know this from the many tags found at Kalibangan, Lothal, and Mohenjo-daro. Regardless of boss style the majority of seals were designed to be strung together for use as needed. That several seals were needed to seal a single load of goods raises the possibility that individual seals contain only part of the necessary information. The implication is that each seal contains only part of the message and that whole messages are constructed by combining several seal impressions. This matter is pursued further in Chapter 4.

Type A: Square or rectangular seals with *Cult* and *Field* objects

These seals are carved into various materials. MacKay (1937) gives the following counts for the seals excavated by him at Mohenjo-daro: steatite = 319, silver = 13, and paste = 1.

Within the corpus[5] more than 1550 examples of the Type A seal are observable. Figure 2.1 (inset) shows the usual form taken by Type A seals. Table 2.2 tells us that the vast majority (886; 78%) of the 1133 seals from the early excavations of Mohenjo-daro are Marshall's Type (b) and most of these are Type A also. The remainder are seal Types B, C, and D.

The pattern for all Type A seals is that they contain inscriptions, Field objects, and Cult objects. Some of Marshall's Type (b) seals do not contain the three basic elements of Type A seals (Type B), while some examples of Marshall's Types (c) and (d) have all three elements of Type A Seals, but have a unique boss.

From Mohenjo-daro there are 23 varieties of Cult objects (Figure 2.4) and 18 varieties of Type 1 and Type 2 Bulls (Figure 2.2). This gives 414 possible combinations of Cult and Field objects on Type 1 and Type 2 Bull seals from this site. Only 46 of these possibilities are found on the seals from Mohenjo-daro. Several combinations are unique. We may deduce from this that specific combinations of Field and Cult objects have meaning (that is they carry part of the message).

Field objects

Field objects are normally animals or groups of animals, often in profile, depicted either standing or crouched to feed, and bearing recognizable sets of markings (Figure 2.2). For example, the Type 1 Bull has markings similar to an upper case W: , while the Type 2 Bull consists of two unconnected linear markings: . These markings are repeated at all major Indus sites. Neck markings vary from simple necklaces to necklaces combined with complicated sets of curved parallel and parallel wavy lines. The two horned bull (Type 3 Field object) is also a Type A seal.

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5 Corpus of Indus Seals and Inscriptions, Joshi and Parpola 1987 and Shah and Parpola 1991

There are significant differences in the distribution of Field objects geographically. Expressed as the percentage of all seals from each site, Type 1 Bulls are proportionally most common at Harappa, while Type 2 Bulls (which are rare at Harappa) are most common at Mohenjo-daro. Kalibangan and Chanhujo-daro have approximately equal proportions of Type 1 and 2 bulls.

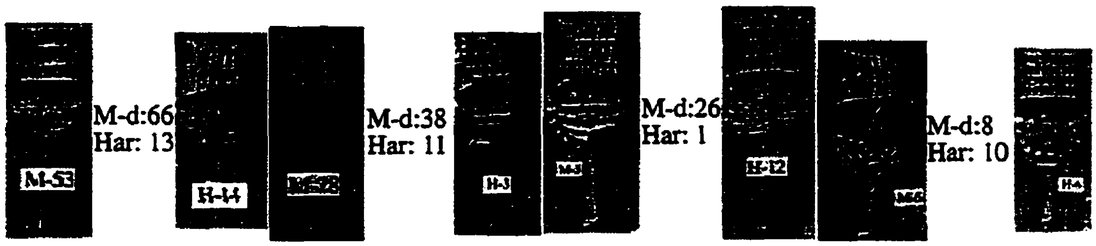
Beyond these two types of Field objects there are 23 other recognizable motifs (Figure 2.2). These Field objects depict animals (Types 1-19) and humans involved in various activities (Types 20-25).

Cult Objects

The identity or meaning of cult objects is more enigmatic, while their classification is easier than the classification of Field objects. The goal of this classification of Cult objects is two-fold: 1) to define the design elements that are used on Cult objects; and 2) to identify combinations of elements that co-occur (Figure 2.4).

Cult objects consist of two components: Tops and Bottoms. Tops can be either rounded or square and can bear various patterns. Rounded Tops (15%) and square Tops (85%) have similar percentages from both Mohenjo-daro and Harappa. Cult object Bottoms can have one of three shapes and may or may not have frills on the lower edge. These variations create six categories into which Bottoms can be placed and two categories for Tops. Additionally, Bottoms can have one of several designs. There are 375 seals from Mohenjo-daro and 128 seals from Harappa that have recognizable and complete Cult objects. There are 408 possible combinations of shapes and patterns for Tops and Bottoms of cult objects, but only 75 combinations are used at Mohenjo-daro and 46 combinations at Harappa. This indicates the preferential selection of certain combinations. Figure 2.4 gives the number of occurrences for Top and Bottom combinations expressed as a percent of the total Cult objects for Mohenjo-daro and Harappa.

The most common Top and Bottom combinations for cult objects are:



The significance of these combinations is not clear. They may be simple stylistic variations or they may carry some meaning.

The relationship between *Cult* and *Field* object is not certain. They do collocate preferentially and there are certain combinations that are far more common. This suggests that they individually convey information which can only be combined in certain ways. This information must relate to the function of seals within the Indus trade network, as *Cult* and *Field* objects rarely occur except on Type A and Type B seals.

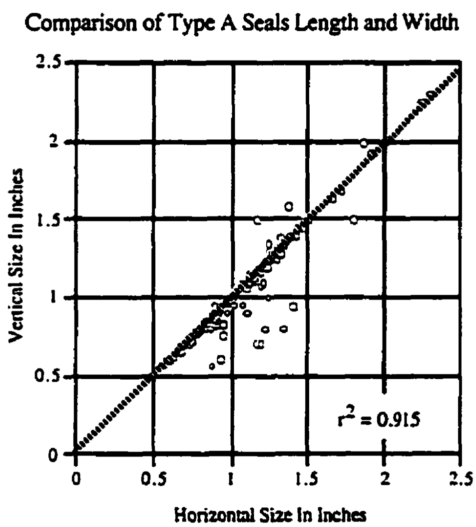
Type B: Rectangular seals inscribed with Field objects and/or inscriptions.

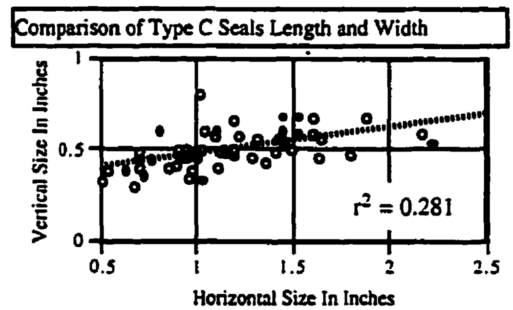
Type B seals are similar to Type A seals, but lack one or more of the defining components of Type A seals. These seals fall into two classes: Type B.a and B.b. Type B.a seals are more similar to Type A seals and are marked with Field object Types 4-7 and 15-19 (Figure 2.2). Type B.b seals (Figure 2.2: 8-14 and 20-25) consist mainly of unique Field objects not always accompanied by an inscription. Further, Type B.b inscriptions (when present) often consist of single or scattered signs (Field objects 20-21 for example).

Type C: Rectangular seals without Field or Cult object.

Type C seals are the second most common seal type at Mohenjo-daro. Type C seals differ from Type A seals in that they lack Field and Cult objects (or any other iconographic elements). This variety is much less frequent, numbering 307 examples

(10% of all seals) for the photographic corpus. These seals are made from the following materials: steatite 59; faience 12; vitreous paste 1; silver 1. The shapes of both Type A and Type B seals are distinctive as the following graphs show:





The distinctive shapes of these seals are a function of the carvings on their faces. The Type C seals contain only inscriptions without the iconographic elements typical of Type A/B seals. Consequently, Type C seals are wider than they are high. This type of seal occurs at most major sites including Mohenjo-daro (168), Harappa (86), and Lothal (45). Chapter 4 will demonstrate that the sign sequences of Type C Seals are different from Type A sign sequences. This is sufficient evidence to postulate a difference in subject matter.

Type D Square seals with perforated boss and geometric design only.

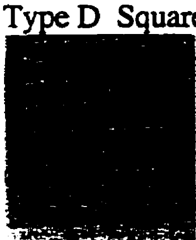


Figure 2.5 compares all known varieties of Type D seals. Mohenjo-daro and Harappa share seven varieties. Type D seals from Harappa are the most varied in design having 14 different motifs. A tag from Lothal (L-174) has an impression identical to H-119 (pictured here). Only Types A, B, C and D seal impressions are found on tags.

Type E: Cylinder seals.

There are four cylinder seals from Indus sites: three from Mohenjo-daro and one from Chanhujo-daro. Only M-1370 has an inscription. Parpola (1994: 184-188) tells us that Indus style cylinder seals are found widely in the Near East (Tell as-Sulema, Tell Asmar, Ur, and Susa). There is a stronger and older cylinder seal tradition in Mesopotamia than there is in the Indus Valley.

Type F: Round Seals



These artifacts are rarer (n=9) and more diverse in content than other seal types. Type F seals occur at Mohenjo-daro (5), Lothal (1), Kalibangan (1), and Chanhujo-daro (2). Seal L-123 is identified by S.R. Rao (1963) as a Dilmun style[6] seal. Other examples (M-415 and M-416) appear to have Field object (Type 5, Figure 2.1) iconography and Indus signs carved on them. The sign sequences are different for Type F seals and this may be because the inscriptions are in a different language from all other Indus inscriptions.

Tablets

Tablets can be defined as inscribed objects with positive, as opposed to intaglio, images and/or inscriptions. These objects have no recognizable utilitarian or decorative function (as do 2.3 Misc. Objects). Tablets are often mold made,[7] incised (Type H/I),

[6] see Bibby T. G. (1972) for descriptions of Dilmun seals.

[7] Bas Relief

etched in copper (Type J), or impressed (Type G.a and b). The following table (2.3) gives the distribution of tablets by type.

Table 2.3 Tabulation of Tablets

	Mohenjo-daro	Harappa	Total
Type G (Bas Relief)	(121)	(309)	(430)
a. Round Impression	14	0	14
b. Square Impressions	14	3	17
c. Rect. Mold (no icon.)	56	159	215
d. Rect. Mold (twisted)	4	8	12
e. Rect. Mold (iconography)	5	6	11
f. Cylinder Mold	1	52	53
g. Ovate	5	18	23
h. Prismatic	13	17	30
i. Cube With Grid	7	0	7
j. Round Imp. (not Type A)	2	46	48
Type H (Incised Rect.)	11	139	150
Type I (Shaped)	1	40	41
Type J (Copper Wafer)	237	0	237
Total	370	488	858

Type G.a-b: Fired impressions of Type A seals

Type G.a and b are baked Type A seal impressions. They are not tags, however, because these tablets are immediately and intentionally fired. Further, they are often shaped and glazed. Type G.a and b tablets are less than 4 cm by 4 cm regardless of shape, while tags are larger and more irregular in shape.

Type G.c-e, and Type H: Mold made, and fired tablets

These artifacts are manufactured by a similar process, but have unique characteristics which need consideration when examining their inscriptions. Type G.c and e, for example, more commonly have the  and one to four  signs on their reverse (n=52 or 25% of all Type G.e tablets). With Type G.d this sequence is much rarer (n=1). G.d artifacts are twisted before firing, although the reason for this practice is unknown. Type G.f, cylindrical mold made, and fired tablets are rare at Mohenjo-daro with all but one example coming from Harappa. This artifact class has both signs and images. While there are 52 examples of these artifacts from Harappa, they all come from five distinct molds. One example (n=38) bears five signs and a Type B bull, another example (n=10)

bears 11 signs and a Gharial (crocodile) eating a fish. Type G.g may be related to Type G.c tablets, as they share several characteristics. Type G.h tablets are prism shaped mold made, and fired. They have signs and/or iconography on all three faces. Type G.i are cube shaped fired tablets with a simple grid design. Type G.j round seal impressions(not Type A seal) can also have the V and one to four | signs on their reverse.

Type H tablets are incised and without iconography. This type of tablet is very common (n=139) at Harappa. They are similar to Type C seals but the inscriptions are not intaglio. Type I tablets are also incised but the artifacts themselves have distinctive and specific shapes. Some of these are zoomorphic, mostly shaped like a hare or fish.

Type J Engraved Copper Wafers

Type J tablets are found only at Mohenjo-daro and consist of copper wafers engraved on both sides with either inscriptions and/or iconography. Two Type J tablets are engraved with the V sign and the ||| sign. [8]

Misc. Objects

The previous types deal with artifacts that have no other apparent use than to carry inscriptions. Inscriptions of all descriptions are found on Type K, L, and M artifacts. These objects had everyday uses (copper implements, ceramic vessels, cones, etc.) and the inscriptions may be marks of ownership (names).

Type K: Utilitarian Artifacts:

Ceramic Vessels

Ceramic vessels from Indus sites bear a variety of inscriptions ranging from a single sign (presumed potter's marks), to lengthy inscriptions, and seal impressions. The longest inscriptions on ceramic vessels (6 signs) are of the incised variety and come from

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[8] Relating to the introductory discussion of Figure 2.3

the site of Kot-Diji near Mohenjo-daro. The vast majority of incised inscriptions are from one to three signs long. From the site of Rahman-dheri (Northwest of Harappa) there are 224 incised inscriptions on pot sherds. Most inscriptions consist of single signs only, some of which are recognizably Indus. The Rahman-dheri inscriptions seem to be simple potters marks with an Indus influence.

Pot sherds and vessels from other sites (Mohenjo-daro, Kalibangan, Kot-Diji, Banawali, and Chanhujo-daro) are marked with longer inscriptions with some sign sequences very similar to short seal inscriptions from those same sites. Several vessels from Harappa have inscriptions with the V and one to four I signs inscribed on their rims (Figure 2.3).

The implication of the longer incised inscriptions is that the potters who scratched them into the vessels were literate enough to compose sign strings of comparable length to the seal inscriptions. This implies wide-spread literacy among at least this segment of the Indus population. These vessels are not elite ware but utilitarian ceramics.

Stamped vessels are found at both Mohenjo-daro and Harappa, although they are more common at the former site. These inscriptions are surprisingly uniform in form but not in content. All of the stamped inscriptions lack the iconography common to the Type A and B seals. Instead these impressions resemble Type C seals, but with much shorter inscriptions (usually three signs). There are 13 of these inscriptions from Mohenjo-daro and two from Harappa. With the exception of M-1382 and M-424 these inscriptions do not repeat. The most probable explanation for the meaning of these inscriptions is that they are the names of the owners. Because the inscriptions are mostly unique, it is unlikely that they refer to the contents of the vessels. Pot sherds with painted Indus signs exist but are very rare.

Type L: Adornments

Bangles and beads also bear Indus inscriptions. While most of these are only one or two signs in length, some (5) are longer. The longest inscription on a bangle is five signs long. These sign sequences are very different in content from either seals, tablets, or ceramics.

Type M: Ivory rods

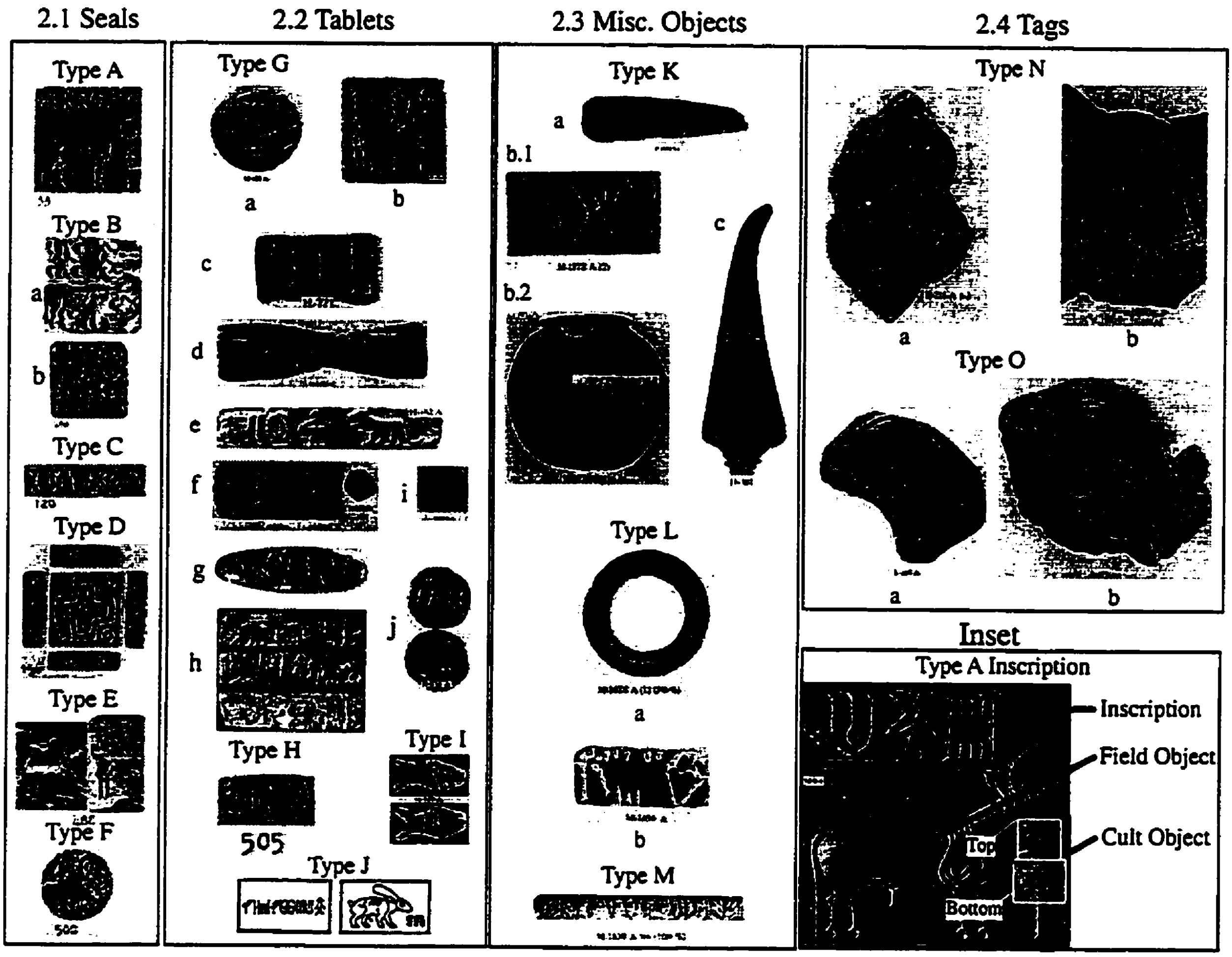
Ivory rods are found at both Mohenjo-daro (n=3) and Harappa (n=1). Several possible uses for these artifacts have been proposed. Fairservis (1992: 232) suggests they had a calendric (lunar) function. MacKay (1938) and Marshall (1937) call them gaming sticks in their discussions of artifacts. We may never be certain of their function.

Type N and O Tags

There are 36 Type N (multiple impression) tags. Examples of multiple impression tags come from the sites of Lothal (27), Kalibangan (6), Mohenjo-daro (2) and Rakhigarhi (1). Tags bear impressions of Type A, B, C or D seals. The longest Indus inscription is on a tag from Kalibangan (K-89) upon which four seal impressions can be seen. Twenty-one signs can still be read.

There are 81 Type O (single impression) tags. Examples of single impression tags come from Lothal (66), Mohenjo-daro (5), Kalibangan (4), Harappa (1), Banawali (1), Hulas (1), Rohira (2), and Lewan-dheri (1).

Figure 2.1 Typology of Inscribed Indus Artifacts



Typology Key

2.1 Seals:
- 2.1.1 Type A Rectangular (w F&C)
  - 2.1.1.1 Field objects
  - 2.1.1.2 Cult objects
- 2.1.2 Type B Rectangular (w Field only)
  - 2.1.2.1 Type B.a Animal w Insc.
  - 2.1.2.2 Type B.b Other
- 2.1.3 Type C Rectangular (no F&C)
- 2.1.4 Type D Square Design
- 2.1.5 Type E Cylinder
- 2.1.6 Type F Round

2.2 Tablets
- 2.2.1 Type G Bas Relief
  - 2.2.1.1 Type G.a Round w Type A Imp.
  - 2.2.1.2 Type G.b Square w Type A Imp.
  - 2.2.1.3 Type G.c Rect. w.out Iconography
  - 2.2.1.4 Type G.d Twisted
  - 2.2.1.5 Type G.e Rect. w Iconography
  - 2.2.1.6 Type G.f Cylinder
  - 2.2.1.7 Type G.g Ovate
  - 2.2.1.8 Type G.h Prism shaped
  - 2.2.1.9 Type G.i Square w grid
  - 2.2.1.10 Type G.j Round molded
- 2.2.2 Type H Incised Rect.
- 2.2.3 Type I Incised specific shape
- 2.2.4 Type J Copper wafer

2.3 Misc.
- 2.3.1 Type K Utilitarian
  - 2.3.1.1 Type K.a Cones
  - 2.3.1.2 Type K.b Ceramics
    1. Stamped
    2. Graffiti
  - 2.3.1.3 Type K.c Copper Objects
- 2.3.2 Type L Adornments
  - 2.3.2.1 Type L.a Bangles
  - 2.3.2.2 Type L.b Beads
- 2.3.3 Type M Other
  - 2.3.3.1 Type M Ivory Rods

2.4 Tags
- 2.4.1 Type N Multiple Impressions
  - 2.4.1.1 Type N.a Type A impression
  - 2.4.1.3 Type N.b Type D impression
- 2.4.2 Type O Single Impression
  - 2.4.2.1 Type O.a Type A impression
  - 2.4.2.3 Type O.b Type D impression

Abreviations

F/Field = Field Object	w = with
C/Cult = Cult Object	w.out = without
Rect. = Rectangular	Imp. = impression

Figure 2.2 Field Objects - Part 1: Type A, Type B and Type F Seals

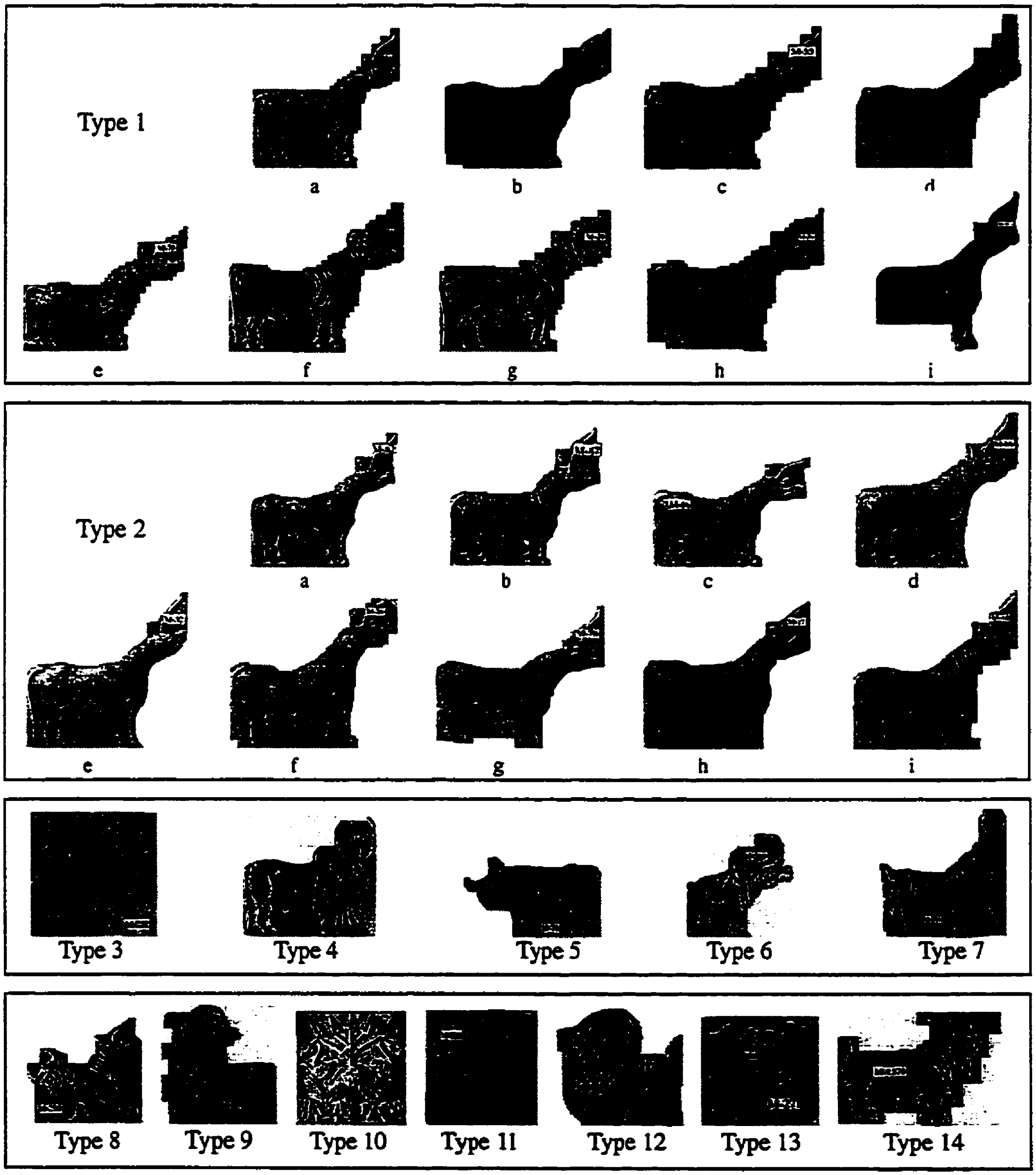
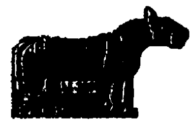


Figure 2.2 Field Objects - Part 2: Iconography of Type A, Type B and Type F Seals

Wild Animals


Type 15

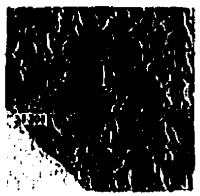

Type 16


Type 17


Type 18


Type 19

Gods or Rulers


Type 20


Type 21


Type 23


Type 24


Type 22


Type 25

Frequency of Field Objects by Type

	Mohenjo -daro	Harappa	Lothal	Other	Total
Type 1	121	143	7	11	282
Type 2	87	32	6	25	150
Type 3	3	0	1	4	8
Type 4	34	6	0	1	41
Type 5	47	12	3	1	63
Type 6	7	1	0	2	10
Type 7	9	1	0	0	10
Type 8	1	0	0	0	1
Type 9	3	0	0	1	4
Type 10	1	0	0	0	1
Type 11	3	0	1	4	8
Type 12	2	0	1	3	6
Type 13	2	0	0	4	6
Type 14	1	0	0	0	1
Type 15	14	1	0	2	17
Type 16	29	9	0	1	39
Type 17	8	0	0	1	9
Type 18	1	1	0	0	2
Type 19	1	0	0	1	2
Type 20	3	0	0	0	3
Type 21	1	1	0	0	2
Type 22	1	0	0	0	1
Type 23	4	0	0	0	4
Type 24	1	0	0	1	2
Type 25	4	0	0	2	6

Figure 2.3 Possible Volumetric System

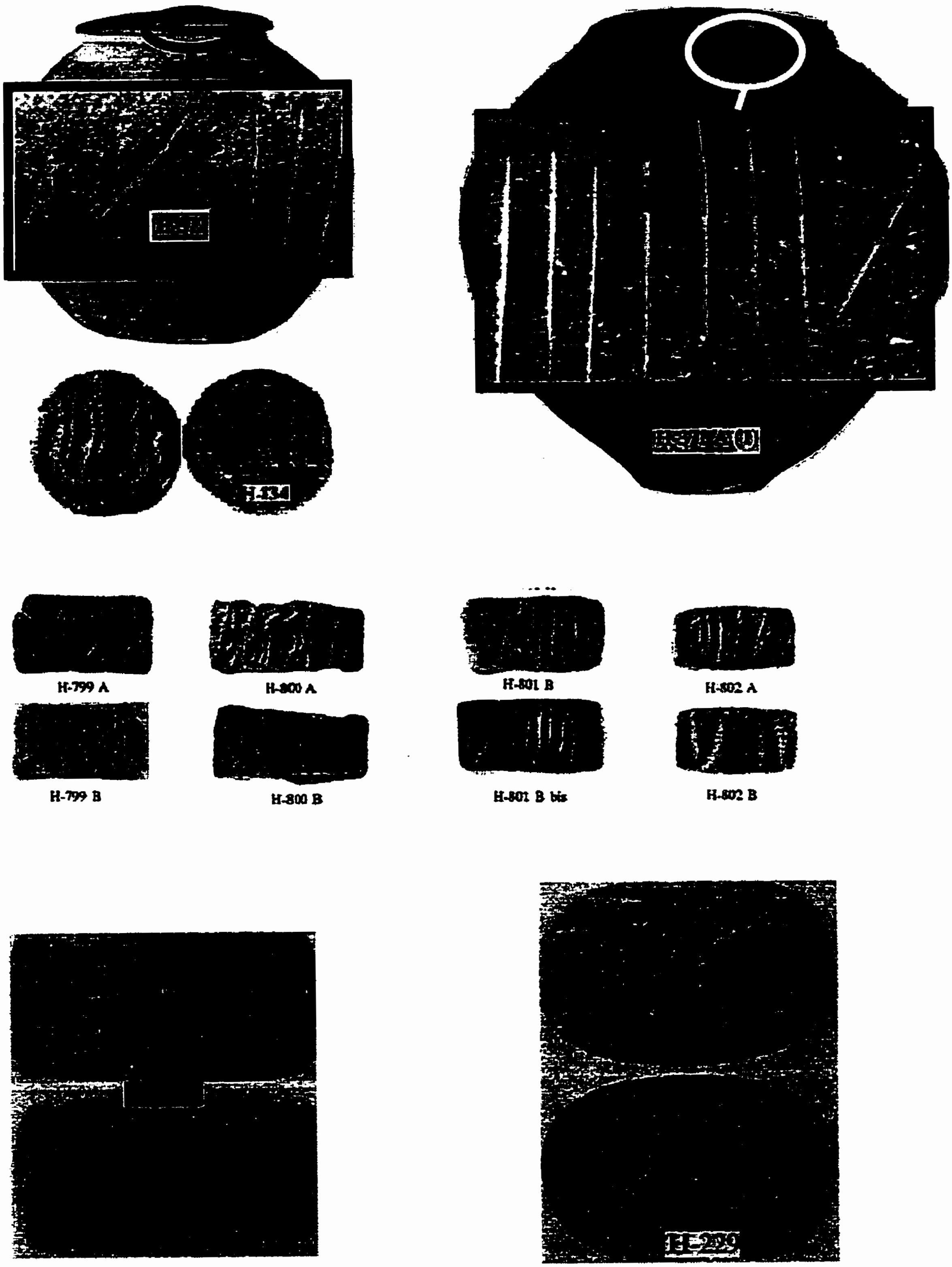
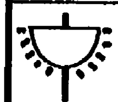
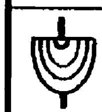
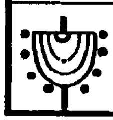


Figure 2.4 Cult Objects

	Mohenjo-Daro 	Harappa	Mohenjo-Daro 	Harappa
	79.94	81.98	29.07	70.83
	20.06	15.32	41.86	20.83
	0.00	0.00	3.49	4.17
	0.00	0.00	20.93	0.00
	0.00	2.70	1.16	4.17
	0.00	0.00	3.49	0.00

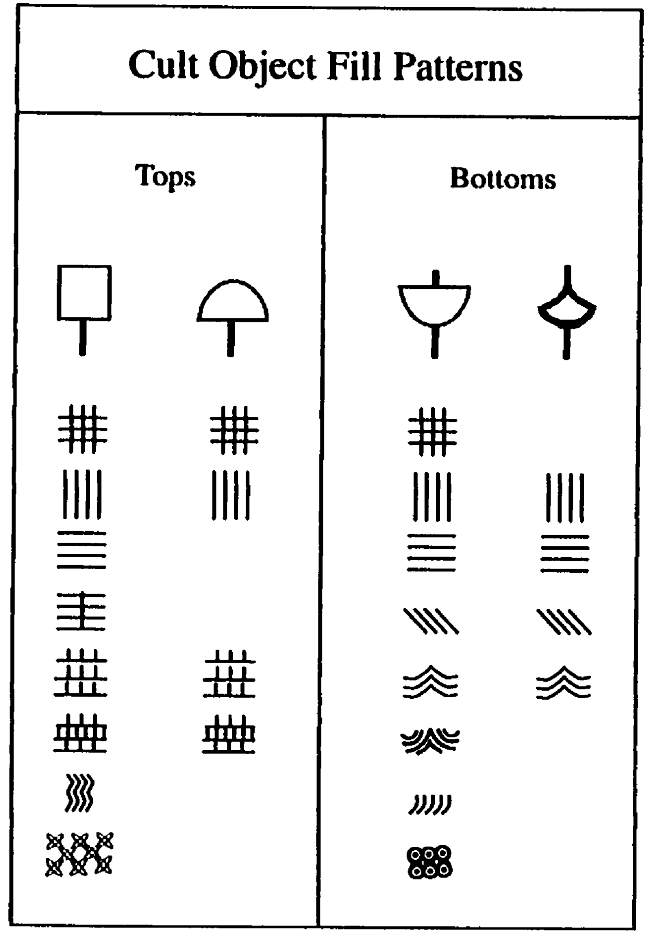
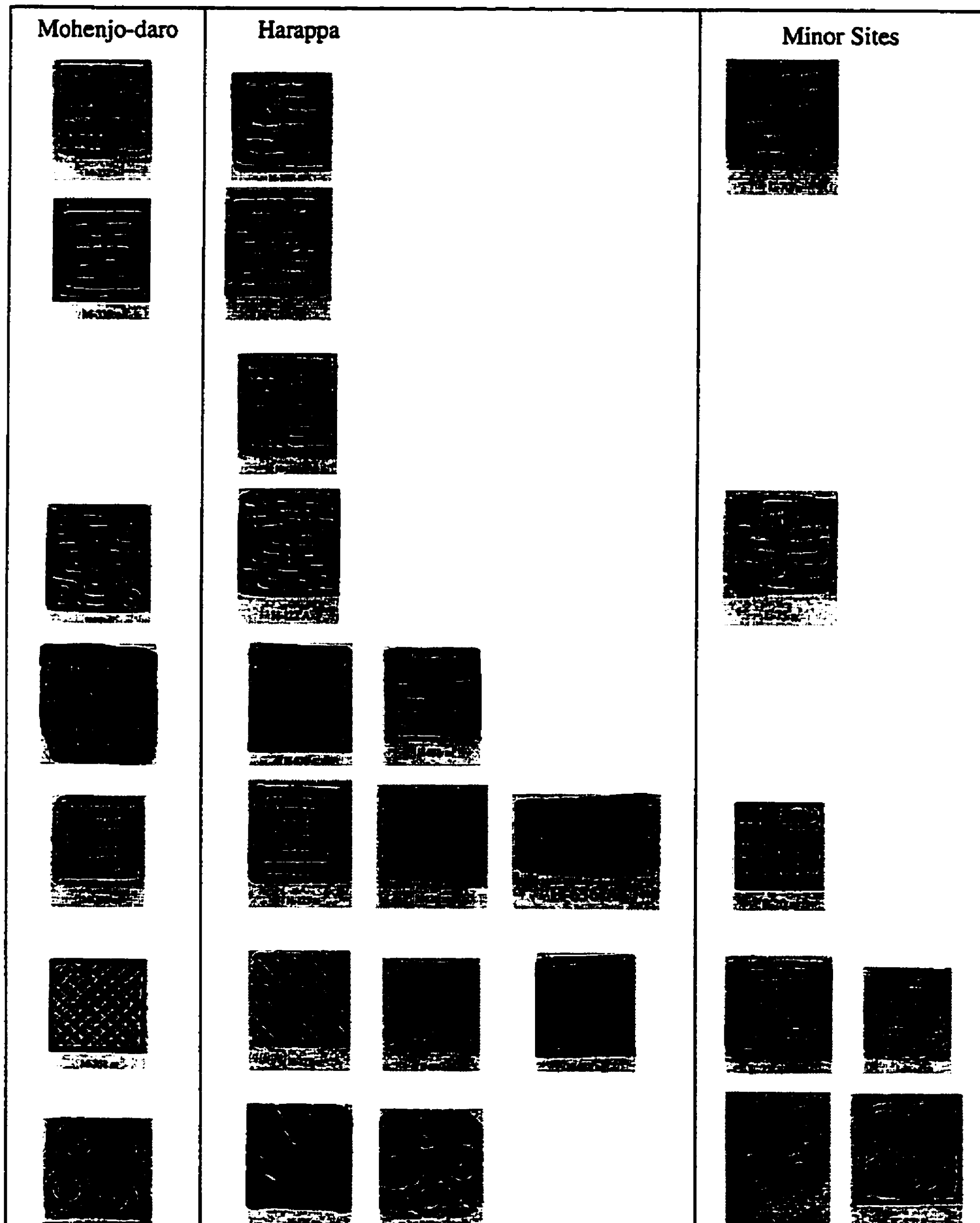
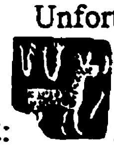


Figure 2.5 Type D Seals



Chapter 3
Indus Sign List

This sign list (Table 3.1 and 3.2) is based primarily on the *Corpus of Indus Seals and Inscriptions* (Joshi and Parpola: 1987; Shah and Parpola: 1991). The corpus represents the largest collection of Indus inscriptions currently available. With the exception of the copper tablets from Mohenjo-daro, signs were generated mostly from the photographic corpus. For copper tablet inscriptions, the published drawings (Marshall:1931; MacKay:1938; and Parpola, 1994:111-2) were used because deterioration to the original artifacts (as seen in the photographic corpus) has removed much of their surface detail. The corpus photographs were used to confirm the reliability of the drawings of the copper tablets where possible.

Unfortunately some artifacts are missing from the corpus, for example SD 2172: .(Marshall 1937:Pl.CXII, 385). Marshall tells us that while excavating the foundation of Chamber 36 in the Great Bath Area of Mohenjo-daro: "There was unearthed a steatite seal (SD 2172) bearing an unusual device" (Marshall: Volume 1, p.136). Other minor omissions exist and the original site reports were used to supplement the corpus where these omissions were recognized. Regardless of its shortcomings the *Photographic Corpus* offers superior photography of both the original seals and their impressions, and so remains the best source of Indus inscriptions. The planned third volume of the *Photographic Corpus* is not yet available and is to include inscriptions from private collections and excavated objects omitted from the first two volumes. The corpus is linked to the original site reports using the artifact field number. This system is cumbersome and effectively isolates the artifacts from their archaeological provenience. This makes analysis of temporal and sitebased studies difficult, if not impossible, in most cases.

In the following pages inscriptions are referenced using the photographic corpus system. This consists of a *site code* and a *sequence number*. For example, M-1 is the first seal in Volume 1 of the corpus (Joshi and Parpola, 1987). M is its site code, in this case Mohenjo-daro, and 1 is the artifact sequence number. The following table lists site codes for major sites from both volumes of the photographic corpus.

Table 3.3 Site Codes and Artifact Numbers

Code	Site Name	Volume 1	Volume 2	Total
M	Mohenjo-daro	M-1 to 620	M-595, 621 to 1659	1659
H	Harappa	H-1 to 264, 278 to 382	H-266 to 275, 356, 383 to 1019	1019
L	Lothal	L-1 to 290		290
K	Kalibangan	K-1 to 122		122
C	Chanhujo-daro	C-1 to 50		50
B	Banawali	B-1 to 37		37
Rdh	Rahman-dheri		Rhd-1 to 270	270
Pk	Pirak		Pk-1 to 49	49
Minor sites:		pp 350 to 363		52
			pp. 387 to 415	145
Total artifacts:		1440	2253	3693

Approaches To The Indus Script

The attempt to establish formal criteria and methods for analyzing the Indus script has been led by Iravatham Mahadevan (1977). His early work with computer-based fonts created the first complete concordance of known Indus inscriptions. His concordance is also the first attempt to link the inscriptions to their epigraphic contexts. His systematic presentation of parallel inscriptions (Mahadevan 1970:157-276) is still the best argument for the existence of grammatical structures related to Dravidian morphology in the Indus script.

Mahadevan's (1977) concordance and sign list have two inherent problems. First, his sign list relies on a standard graph standing for several sign sub-varieties, and it stands for them in the graphemic sense when analyzing context. This factor reduces the detail of the structural analysis based on these generalized sign lists. In the following discussion of sign contexts I give details of why Mahadevan's (1977) sign list of 417 signs does not adequately represent some significant and demonstrable clustering of sign

sub-varieties in the Indus inscriptions. The second problem is that he relies too heavily on visual similarities of sign graphs in defining his sign list.

More recently Asko Parpola (1994) has tried to formalize techniques for analyzing the Indus script. Parpola (1994:68-79) outlines three criteria "for identifying two or more graphs as variants of a single grapheme":

> 1) *The potential variants (e.g..*  *and*  *) bear a reasonable resemblance to each other, so that they can be assumed to represent one and the same object.* He further specifies that intermediate forms should exist.
>
> 2) *Two signs meeting the above condition occur only in almost identical contexts.*
>
> 3) *If there are any ligatures (composite signs) composed of the same signs, they may behave in the same way as the simple signs.*

The identification of reasonable resemblances (Criterion 1) is a subjective process based on individual assessments. The following discussion of signs 5, 8, and 11 demonstrates that both the Mahadevan (1977) and Parpola (1994) sign lists have critical flaws that work to distort the structure of the inscriptions. The lesson here is that minor variations in graphs can be linked to significant changes in sign distribution, while large variations in graph forms are sometimes completely allographic.

Parpola's second criterion (1994:69) has some serious problems as well. For example, we can assume hypothetically that signs 262  and 263  are the logographs for wheat and barley respectively. They can then reasonably be expected to have identical structural contexts while being two distinct graphemes.

For Parpola's third criterion, a ligature which behaves like its simpler form is extremely rare in Indus inscriptions. The behavior of ligatures (*Field Shifting* and other

mechanisms)[1] varies with the type of addition made to the sign graph. As this chapter demonstrates, the concept of *ligature* does not adequately address the recognizable structures within the Indus inscriptions. Indus signs are instead categorized as shown in Figure 3.1.

The consideration of inscriptions as having both archaeological and linguistic aspects is central to the conjunctive approach applied in the construction of the sign list. The examples offered as evidence for this sign list require the consideration of many lines of evidence. Parpola's criteria need to be expanded to include all related data important to the definition of graphemes (signs).

The process of analyzing Indus inscriptions involves the comparison of sign behavior to the morphology of known and reconstructed languages. The consideration of relationships between linguistically defined patterns and structural patterns in the inscriptions[2] depends on the nature of the sign list. Detailed sign lists allow detailed analysis of sign behavior and detailed reconstructions of internal patterns in the inscriptions. The systematic removal of detail from the sign list, by too comprehensively grouping variants, obscures the more detailed structures in the inscriptions. For this reason, new signs were added to the sign list (Table 3.2) where doubts existed concerning the classification of sign variants. Special consideration was given to double signs and mirror image signs when constructing this sign list. These signs represent potentially important special cases that must be annotated before structural analysis is begun.[3]

The purpose of Figure 3.1 is to categorize Indus signs in a way that reflects the structure of the script. The location of Indus signs within inscriptions is affected by the addition of a fixed inventory of marks. Some of these marks can be combined to form

---

1 See Chapter 4.

2 Chapter 4

3 Mirror signs may indicate a different reading order (left to right) or may signal a reversal of the normal graphemic value of that sign.

signs with multiple markings. The sign typology (Figure 3.1) is multi-tiered, consisting of sign *Class* and *Type*. Sign classes are defined as follows:

Simple Signs (SIM): A simple sign consists of a definable Indus grapheme without any elaboration. They are the simplest form of a sign. There are 127 simple Indus signs. Simple signs are further divided into Stroke and Other signs.

Complex Signs (CMX): An elaborated form of a simple sign using elements which are not themselves signs. Internal hatching is a common type of elaboration. There are 175 complex Indus signs.

Compound Signs (CMP): Two known signs combine to form a single sign. There are 135 Indus signs that fall into this class. These signs can be Attached, Conflated, Doubled, Infixed, Mirror, Multiple or Other.

Marked Signs: (MKD): The addition of a fixed set of elements to a simple, complex, or compound sign. There are 11 marks found in Indus inscriptions, and 146 marked Indus signs. Marked signs behave differently from their unmarked counterparts. In 4 cases more than one sign is enclosed by markings: 126, 145, 226, and 250.

Indus signs can be given one of the 18 different sets of markings used in the inscriptions. Some signs (148:) do not exist in their unmarked state. In some cases the boundaries between marked and compound signs are blurred. Sign 405 is sign 520 marked with sign 392; whereas sign 402 is sign 262 attached to sign 392 (compound). The same logic can be applied to ovates such as sign 357 (marked) and sign 32 (compound).

Seven signs have more than one type of marking. For example sign 119 is marked with both a superfix and a cage. Chapter 4 examines in detail the effects of the addition of various markings to Indus signs. In terms of the sign list the typology as given in Figure 3.1 applies.

Marker Signs (MKR): Marker signs were recognized by Parpola (1994:88-92) as being elements that separate groups of signs within inscriptions. There are three well known markers: 193, 196 and 231 (Figure 3.1). Signs 193 (n=180) and 196 (n=82) are the most problematic of this class of signs as they may be markers in one context and numerical in another. Sign 231 (n=120) has two varieties and can vary greatly in size.

In addition to the descriptions above, some signs have examples in mirror image, and these occur only in the first four classes given above. Mirror signs may be the result of a reversal of reading order, but this accounts for only 5 of the 42 examples of mirror image signs. For 10 examples reading order cannot be determined. The majority of mirror signs (27) are found in inscriptions with normal reading order (right to left). If these are syllabic signs, then reversed graphs may have the CV[4] order reversed to create VC syllables.

In 162 inscriptions 26 signs are doubled. These signs are defined within the sign typology as a separate *Type* of compound sign. The function of doubling is unknown but it may be a way of creating CVCV or CVC syllables. Both the mirrored and doubled signs need further study.

Stroke Signs

There are 37 types simple stroke signs in the Indus inscriptions. Stroke signs can be categorized into three groups: long strokes (signs 198, 194,195,205,209, 220, 221, 222, 224, and 212); short strokes (signs 193, 196, 197,199, 200, 201, 202, 203, 206, 207, 208, 210, 211, 217, 218, 219, and 227); and staggered strokes (229 and 230). Long strokes seem to represent numerals from one to six only. Sign 194 can take attachments (221, 222, and 228) and superfixes (220). Short stroke signs representing numerals can be either linear (196, 193, 197, 200, 202, 217, 210, 214, and 215) representing 1 through 7, or stacked (206, 218, 211, 203, 199, 208, 219) representing 1 through 9. Some of

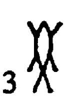
[4] C=consonant, V=vowel.

these signs can also receive markings (204, 214, 215, 216, 223, and 225). Staggered signs represent the numerals 8 and 9 only. I would argue that these various types of simple stroke signs represent values in the Indus system of weights and measures, and not numerals *per se*.

The Sign List Data Base

In total there are 587 signs with 802 varieties annotated in the sign list (Tables 3.1 and 3.2). Table 3.1 is arranged by *Set* and by sign *Frequency*. This arrangement facilitates identification of sign graphs. Table 3.2 is arranged by *Sign Number* and gives the locations of the inscriptions for each sign. Computer technology can be effectively applied to the sign list in several ways. First, a data base program[5] can be used to group signs (using their Class and Type, for example) for further analysis. Second, single signs can be extracted, using their sign numbers, for structural analysis. Third, summary variables can be used to give tallies for selected sign subsets. For example, there are 7121 references to sign locations which break down as follows: Mohenjo-daro 4094 references (57.35%); Harappa 2154 references (30.25%); Lothal 360 references (5.06%) and Minor sites 523 references (7.34%). It can be immediately seen that the majority of references in the sign list data base refer to artifacts from Mohenjo-daro.

Using the search tool, records (signs) which match certain criteria can be extracted. For example, single occurrence signs (n=1) have the following distribution: total = 284; Mohenjo-daro 190 (66.90%); Harappa 47 (16.55%); Lothal 15 (5.28%); Minor sites 32 (11.27%). The number of single occurrence signs from Mohenjo-daro is about 10% higher than expected.

These sorts of searches can target specific signs. For example, sign 113  has the following distribution: n=179; Mohenjo-daro 85 (47.49%); Harappa 78 (43.58%); Lothal 6 (3.35%); Minor sites 10 (5.59%). These numbers show that sign 113 is much

5 In this case FileMaker Pro 3.0v4, Claris Corporation.

more numerous at Harappa than is expected. These searches are almost instantaneous and provide a powerful analytical tool. Further, these results can be mapped and compared (Figure 3.5).

These maps show that the distribution of signs is geographically uneven. Given the proportions of the inscriptions from Indus sites the pattern for signs 288, 193, and 112 are about what would be expected. Sign 289 is most common at Harappa because it is found primarily on bas relief tablets, which are more common at that site. Signs 289 and 241 show higher than expected frequencies at Harappa, but this cannot be linked to a special case as with sign 289. Signs 289 and 241 may be more frequent than expected at Harappa for a variety of reasons. Regional differences in trade practices or dialect are the most likely reasons. These maps disprove the long held opinion that the Indus script is homogenous with standardized usage.

Expanding Parpola's Criteria

Most approaches to the Indus script have grouped inscriptions without consideration of archaeological data. The analysis of groups of inscriptions from different artifact types mixes inscriptions with very different content. Further, there are recognizable geographic differences in sign distributions and these can help clarify the sources of allographic variations. A detailed sign list makes the results of structural analysis[6] more meaningful in that it reveals more detail of the underlying structures of the script. The idea that these patterns will reflect the syntax and morphology of an undetermined Indus language is the central paradigm of Indus epigraphy. The identification of the Indus language in this manner is only tentative in that it must be verified by other lines of evidence.

The nature of the information transmitted by the Indus inscriptions varies with artifact type. Seals were used to control the flow of shipments of trade goods (Kelley

---

6 Structural analysis was pioneered by D.H. Kelley (1982).

and Wells 1995:16-17). Tablets may have been votive offerings (Parpola 1994:107-109) or exchange tokens. While there is some overlap in the distribution of Indus signs, certain signs do occur more frequently on specific artifact types and at specific sites. Sign graphs can be analyzed using linguistic, archaeological, and structural information which work together to define grapheme boundaries.

I propose the following emendations to Parpola's criteria:

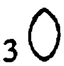
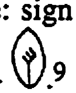
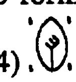
Criterion 1. Everyone will delimit reasonable resemblances somewhat differently and this reduces the reliability of sign lists based only on sign graphs. The determination of what details are important in a script which is both undeciphered and artistically rendered may not be so easily resolved. The premature elimination of important sign variations can cause problems, especially with replacement fonts such as Mahadevan's and Parpola's. Therefore, sign graphs are most useful in the initial grouping of examples. In Table 3.1 this is done using *Set* numbers to group signs showing a reasonable resemblances at the grossest level. The sign database has 63 Sets.

Allographic variations are clues to grapheme boundaries. After possible sign variants are identified, through Set numbers and visual sorting, it is possible to delimit more exactly the distinction between the allographs of a grapheme. This process consists of extracting related inscriptions from the photographic corpus using the sign list and comparing sign variants. As the following discussion demonstrates, in many circumstances signs define themselves by their contexts.

Criterion 2. This criterion is too simplistic, and needs to be expanded to include sign contexts which show a preference for specific varieties of signs.[7] An examination of sign 11  shows these inscriptions come from a specific class of artifact, pointing to the importance of linking the sign list to an artifact typology. Eight of the eleven examples of sign 11  are found on bas relief tablets from Harappa (Figure 2.1: Type G.f) and four of these tablets are from the same mold. There are eleven inscriptions but

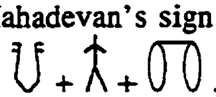
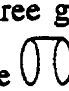
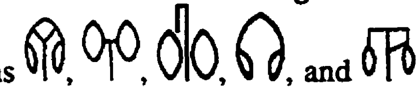
[7] A case study in this chapter examines signs 5 , and 8 as an example of this.

only 7 separate examples of this sign for that reason. This weights consideration of sub-variety uniformity when defining standard sign graphs (Table 3.1). Examinations of the context of specific inscriptions must include their archaeological contexts as far as these are known --particularly the artifact type (Figure 2.1). Structural contexts should be evaluated after the grouping of inscriptions by artifact type.

Criterion 3. The existence of ligatures which behave in the same way as their component signs are rare in Indus inscriptions. Many ligatures in the Indus script are accompanied by shifts in the location of the resultant sign to a different field.[8] For example: sign 582  shifts right when it is infixed in sign 213  to form the marked sign 194 .[9] When sign 194 is marked with a single 'cage' (sign 204)  it moves left in the inscription. Analysis of marked signs and their contexts demonstrates that specific additions to basic sign graphs result in predictable changes in sign positioning within inscriptions. This criterion should be reworded to read: *Graphemic elements will demonstrate the same range of allographic variation regardless of their Class and Type.*

Criterion 4. This criterion extends considerations of context to include the geographic and temporal provenience of an inscription as far as they are known. One possibility is that signs with limited distributions are regional allographs. Systems of writing undergo changes over time and space. Some signs have unique variations which are temporally and/or geographically restricted.

Mahadevan's Sign 15

Mahadevan's sign #15[10] is often described as the ligature of three graphic elements: . The first two are common Indus signs. While  never occurs alone, the graphically similar signs  do occur as independent signs.

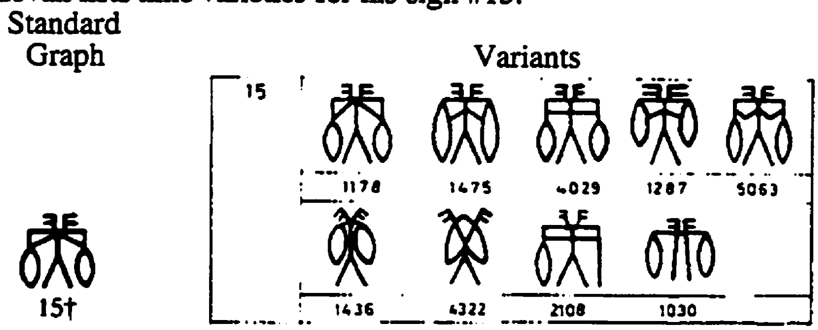
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8 see Parpola 1994:88-94 for a discussion of fields

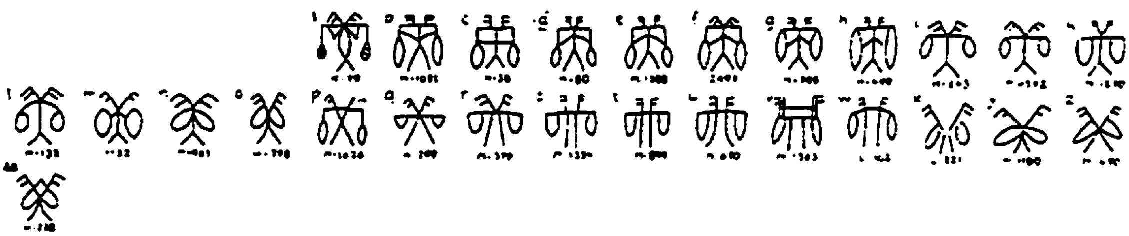
9 Field shifting is discussed in Chapter 4

10 Signs 5, 8, and 11 in Table 3.1

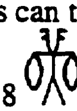
Mahadevan lists nine varieties for his sign #15:



Parpola lists 27 varieties of this sign (his sign #4):

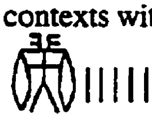


Applying The Expanded Sign Criteria

1) On the basis of visual appearance, the variants of Mahadevan's sign #15 varieties can be divided into four groups (Figure 3.2). Three of these groups require further analysis: Sign 5  - those with arms and a carrying pole. The arms can take 6 forms, and there is no noticeable link between arm shape and context; Sign 8  - those with no arms, but which have a carrying pole; and sign 11  - those with neither arms nor carrying pole.

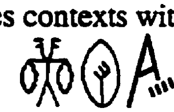
2) The contexts of these inscriptions have strong patterns of association:

Sign 5 Shares contexts with sign 8., but not with sign 11:

M-187 

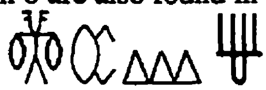
L-102 

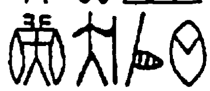
Sign 11 shares contexts with sign 8 but not with sign 5:

H-152 

H-58 

Sign 5 and sign 8 are also found in unique contexts:

M-379 

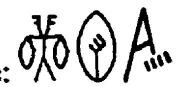
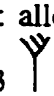
M-282 

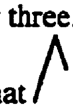
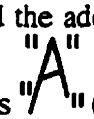
3) Analysis of ligatures is not applicable for signs 5, 8, and 11 but is for sign 343 discussed under Collateral Results.

4) There are definite locational preferences in terms of sign use and artifact type (Figure 3.3). This correlation of sign to artifact type is not perfect but is noticeable in Figure 3.3. Sign 5 occurs most often on Type A seals from Mohenjo-daro (n=17). There is only one example of this sign that is not from a Type A seal and that is found on a Type G tablet from Mohenjo-daro. At Harappa sign 5 occurs 7 times. There are ten occurrences of sign 8 from Harappa, 7 from Mohenjo-daro, and 2 from Lothal. Most Harappan examples of sign 8 are from Type B seals. Sign 11 is also most common at Harappa (n=9). Whether these patterns are related to regional variations in style or to differences in the subject matter of the inscriptions is not clear.

We know from Chapter 2 that bas relief tablets are more abundant at Harappa (309) than at Mohenjo-daro (121). Whatever the use of tablets in antiquity, this practice was far more important at Harappa than at Mohenjo-daro. If Parpola is right (Parpola 1994:107-109) then this disparity may indicate differences in religious practices within the Indus valley. If bas relief tablets are exchange tokens, then the difference might indicate that Harappa was more highly organized economically, and politically more structured than Mohenjo-daro.

Collateral Results

The sign sequence:  occurs five times at Mohenjo-daro and 17 times at Harappa, with signs 8 and 11 co-varying, and signs 436 to 446 occurring in most varieties. Sign 5 never occurs in this context. The most constant element in this sign cluster is the middle sign (343) . This is never replaced by sign 344 . This is confirmation that signs 343 and 344 are different graphemes and not allographic variations as Parpola (1994:17) suggests. Likewise signs 262  and 263  must be different signs, using the expanded criterion number three.

The variations in signs 436 to 446 suggest that  (sign 235) or  (sign 440?) is the basic sign and that infixes change the quantity, but not the quality of the basic sign. If so, then the basic signs are logographs and the additions are various quantities of . This basic sign receives double cage markings  (sign 442) in one example.

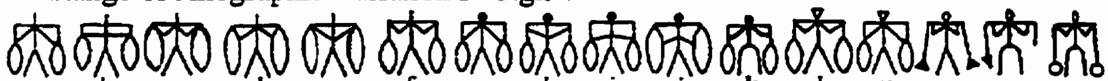
Changes in Orientation to Save Space

Sign 414 is found at Mohenjo-daro (n=26), Harappa (n=5), Lothal (n=1), and Kalibangan (n=11). This sign has been variously interpreted as a crown (Knorosov, Albedil, and Volchok, 1981:82), and mountains[11] (Parpola, 1994:58). One variety  seems to me more like a group of tents (Ta. *Kutaram*). Regardless of what this sign represents, its' variants tell us something very important about Indus inscriptions. Sign 414 is wider than it is high and, therefore, uses a lot of horizontal space on the inscribed surface (Figure 3.4). Because seals are small in size, the horizontal space used by 414 creates a shortage of space when long inscriptions are to be carved. Therefore, orientation of Indus signs may not be meaningful in the graphemic sense.

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[11] Ta. *Kunru*

The Range of Allographic Variation In Sign 4

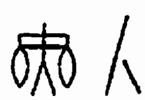


a b c d e f g h i j k l m n o p

Sign 4 has sixteen varieties, the most varieties of any Indus sign. As can be seen from the sign graphs above, most variations are in the design and placement of the arm and leg elements, and the objects suspended from the carrying pole. This is typical of the allographic variation found in Indus inscriptions, and these sorts of variations are not linked to specific context. For example, the following inscriptions demonstrate different varieties of sign 4 in similar contexts:

Set 1

M-783 

M-201 

M-664 

Set 2

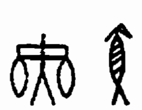
M-1082 

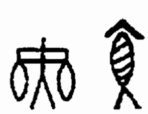
M-834 

M-43 

Set 3

M-160 

M-969 

H-416 

Compound signs

Compound signs consist of two or more simple or complex signs combined in various ways (Figure 3.1) to form a single sign cluster. Several questions need to be answered in the analysis of these signs. First, what are the component signs? The answer to this question is not always simple, and has traditionally been expressed using a formula. For example: sign 275 consists of signs 282 + 262. The question of reading order is still not resolved. Should this formula read 275 = 282 + 262, or 275 = 262 + 282 ? This question is further complicated by signs such as 328, which is a combination of three signs: 266 [12] + 288 + 342. The reading order in this inscription can be worked out using column analysis (Chapter 4). In inscriptions with sign 288: sign 266 is always to the right of 288, and sign 342 is always to the right of both 288 and 266. The reading order of the components of this compound sign is therefore: . (read from right to left). This sign sequence does not occur independently, making verification of the reading order impossible. The same is true for sign 285. This sign may be a combination of signs 282 + 348 + 414. This sequence is the likely reading order given the known distributions of signs 282 and 414.

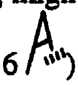
Some compound signs (25 for example) present less of a problem because they are arranged in a way that requires they be read in order (right to left). In cases where the reading order can be worked out, the chances of working out readings for these signs is improved.

The question remains: why compound signs? Several answers are possible. First, inscribed artifacts are typically small in size and compounding might result from the need to conserve space, as rotation does. If this is the source of compounding, then

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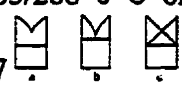
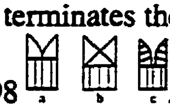
12 This may be sign 264 conflated as a double sign.

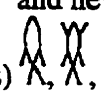
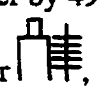
compound signs should also exist as sign clusters where space is available. There are no clear cases where compound signs replace the component sign cluster in identical context. Further, attached compound signs can occupy about as much space as the two signs occupy separately (sign 25).

The second possibility is that compound signs occur because of linguistic relationships between signs. Compound signs may reflect traditional spellings of common words, giving them an almost logographic value. When the associations of certain signs is not clear from their context, compounding might be a convenient method of associating signs clusters. Some compound signs (436 ) may be conflations of a noun and an adjective. These relationships are not necessarily mutually exclusive and several factors may influence the construction of compound signs.

Internal Hatching

The main purpose of the sign list (Table 3.2) is to bring together for analysis all contexts of allographic variants of a single sign. The extraction and analysis of parallel inscriptions from the locations given in the sign list allows the details of sign behavior to be clearly defined. For example signs 497 [13] and 498 [14] are graphically similar, yet a careful examination of their contexts reveals a pattern of sign distributions which can be expressed as follows:

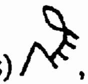
1) If the sign sequence 305/288  or 303/288  terminates the inscription then it is always preceded by 497  and never by 498 .

2) Sign 497 does collate with (follows) , or , while 498 does not.

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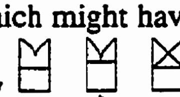
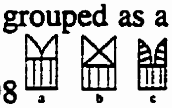
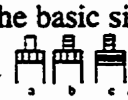
[13] see Mohenjo-daro: a) M-221; b) M-284, M-818; c) M-1115. Harappa: a) H-205 (Bas), H-563, H-811 (Bas), H-890; b) H-774 (Bas); c) H-217 (Bas). Lothal: b) L-211 (Tag). Kalibangan: K-15, K-28. Rakhigarhi: Rgr-1

[14] see Mohenjo-daro: a) M-140, M-736 c) M-34, M-755, M-832; Type C-> c) M-372, M-1271. Harappa: a) H-170 (Bas), H-218 (Bas), H-297 (Inc), H-817 (Bas); b) H-818 (Bas), H-892 (Inc); c) H-216 (Bas), H-441, H-893. Kalibangan: c) K-44

3 Sign 498 does collate with (follows) , while 497 does not.

The implication of these associations is that sign 497 and 498 are separate signs and not merely allographs. The only differences in sign graph appears to be hatching. This suggest that internal hatching changes the meaning of the basic sign.

Other relationships can also be seen. For example, the sign cluster  occurs only on tablets at Harappa. The only time these signs occur as a set is at Mohenjo-daro where they are in reverse order () and are in a very different context (on a Type A seal). This patterning shows that there are recognizable regional variations in sign usage.

The relationship between signs 497 and 498 is paradigmatic, and serves as an excellent example of how these relationships can be used to define graphemes. In this case it is not the shared contexts which define these signs, but their mutually exclusive contexts. The lack of syntagmatic relationships between graphically similar signs, and the existence of parallel inscriptions with distinct preferences for specific sets of sign variations, allows the identification of graphemes which might have been grouped as a single sign based on their appearance alone. Signs 497  and 498  differ in design in that 487 consists of only the basic outline while 498 has hatching added to the basic design. Therefore, the addition of hatching modifies the meaning of the basic sign in some way which may result in mutually exclusive contexts. Also found in mutually exclusive contexts are signs 469  and 470 . These have a similar visual relationship to that shared by signs 497 and 498, and this confirms that internal hatching affects the meaning of the basic sign. Another group of signs that are related in this way are 475  and 477 . As with the other examples the presence or absence of internal hatching seems to be the important factor, while the specific form of hatching has no noticeable effect on sign behavior.

Conclusion

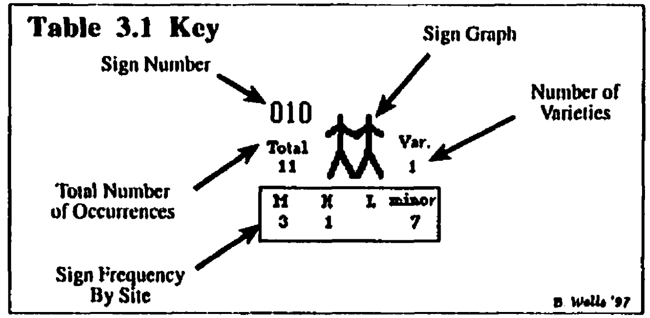
The discussion given in this chapter has defined formal criteria for differentiating allographic from graphemic variations found in Indus signs. The examples given in this chapter were selected to demonstrate how these criteria might be applied to sets of possible allographs.· The examples have shown that minor graphic variations of signs may mark different graphemes. Figure 3.6 lists 24 examples where previous sign lists have not adequately defined demonstrable graphemes. These previous attempts lacked a comprehensive corpus, and a detailed sign list.

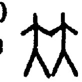
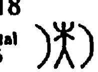
The decipherment of the Indus inscriptions is not an epigraphic problem alone. It needs to encompass the archaeological, linguistic, geographic, and epigraphic dimensions of the inscriptions. The Indus civilization has often been described as homogenous. As Chapters 1, 2 and 3 of this thesis have shown, this is not the case upon detailed examinations of the data. There are some characteristics which seem widespread and uniform in very general terms. The use of seals and tablets, site settlement patterns, and a relatively uniform system of weights and measures are among the more standard attributes of Indus Culture. Regardless of similarities, there is no evidence that the entire Indus region was unified politically or theologically. As Chapter 4 shows there are some interesting differences in the structure of the inscriptions which could indicate regional linguistic differences.

The discussion of signs 4, 469, 470, 497, 498, 475, and, 477 demostrates one of the underlying priciples of Indus writing: the presence or absence of features seems to be important in terms of sign differentiation, while the form that these features take does not seem to affect sign usage.

Table 3.1 Signs Sorted by Set by Frequency

	Frequency	%
Total Mohenjo-Daro	4094	57.41
Total Harappa	2154	30.21
Total Lothal	360	5.05
Total Other	523	7.33
		Total Sign Varieties
Total Occurrences	7131	802



Sign	Graph	Total	Var.	M	H	L	minor
001		62	7	41	15	4	2
002		49	4	33	8	3	5
003		47	4	36	7	1	3
006		21	1	18	2	1	
009		14	2	5	7		2
010		11	1	3	1		7
013		8	1	5	1	2	
014		7	1	6	1		
015		7	3	6		1	
016		7	3	3	1	3	
017		6	1	4	1		1
018		6	1	4	1		1
019		4	1	3			1
020		4	2	4			
021		4	1	4			
022		4	1	4			
023		4	1	1		3	
024		3	2	1	2		
025		3	1	2	1		
026		3	1	3			
029		3	1	2	1		
030		2	1		1		1
031		2	1	2			
032		2	1	1	1		
035		2	1	2			
036		2	2				2
037		2	2	1			1
038		1	1	1			
040		1	1	1			
041		1	1		1		
042		1	1		1		
043		1	1	1			
044		1	1	1			
045		1	1	1			
046		1	1	1			

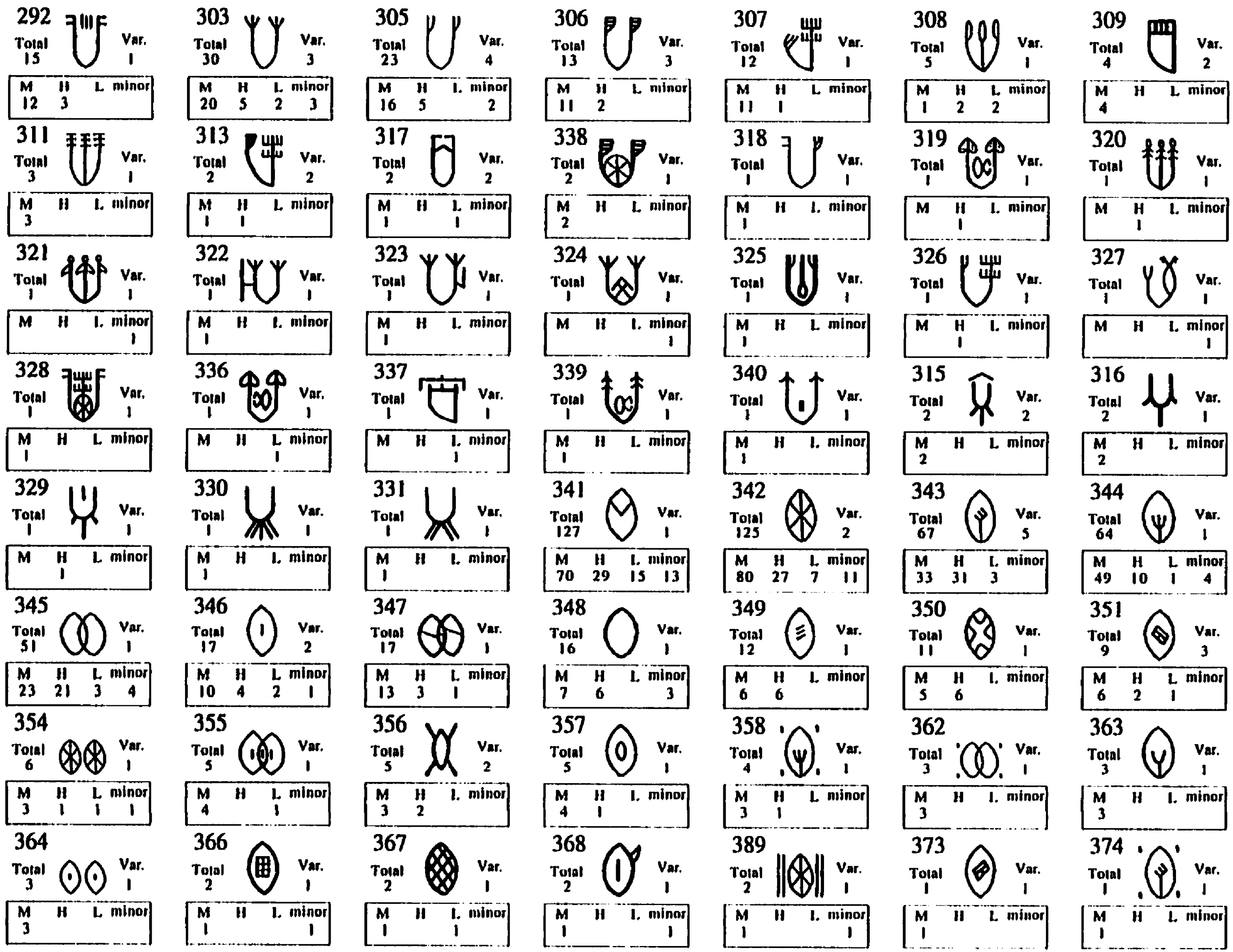
Sign	Total	Var.	M	H	L	minor
047	1	1	1			
048	1	1	1			
049	1	1				1
050	1	1	1			
051	1	1	0	1	0	0
052	1	1	1			
053	1	1	1			
054	1	1	1			
059	1	1		1		
060	1	1		1		
061	1	1	1			
062	1	1	1			
063	1	1			1	
065	1	1	1			
068	1	1	1			
069	1	1	1			
070	1	1	1			
071	1	1	1			
072	1	1	1			
004	35	16	21	6	1	7
005	29	6	18	7	2	2
008	19	9	7	10	2	
011	11	2	2	9		
027	3	2	3			
028	3	3	2	1		
055	1	1	1			
056	1	1	1			
352	8	1	5	3		
359	4	1	3			1
074	3	3	3			
075	3	1	1	1		1
076	1	1		1		
372	1	1	1			
385	1	1				1
007	20	1	13	5	1	1
012	8	2	3	4		1
033	2	1	2			
034	2	2	2			
039	1	1	1			
057	1	1				1
058	1	1		1		
064	1	1	1			
066	1	1	1			
067	1	1	1			
073	11	2	9	2		
077	1	1			1	
078	63	9	37	19	3	4
079	7	1	4	3		
080	1	1				1
081	1	1	1			
082	1	1		1		
083	1	1			1	
144	1	1	1			
084	64	3	40	18	3	3
085	1	1				1
086	9	4	8		1	

No.	Total	Var.	M	H	L	minor
087	5	2	3	2		
088	3	2		3		
089	2	1	1	1		
090	1	1	1			
091	1	1	1			
092	1	1	1			
093	1	1				1
094	1	1	1			
095	1	1	1			
096	9	1	6	1	1	1
097	4	3	4			
098	3	2	3			
099	2	1	2			
100	2	1	2			
101	1	1	1			
102	1	1		1		
103	1	1	1			
104	1	1	1			
105	1	1			1	
106	1	1	1			
107	1	1	1			
108	1	1	1			
109	1	1	1			
110	1	1	1			
111	1	1	1			
112	187	1	118	46	8	15
113	179	1	85	78	6	10
114	127	1	84	34	5	4
115	74	1	43	16	9	6
116	55	2	36	14	3	2
117	42	1	27	11	3	1
118	21	1	15	1	3	2
119	11	1	8	1	1	1
120	8	1	7	1		
121	7	2	4	3		
122	7	2	3	3		1
124	5	1	3		1	1
125	4	1	4			
126	2	1	1	1		
127	2	2	1			1
128	2	1	2			
129	2	1	1	1		
130	2	1	1		1	
131	2	1				2
134	1	1				1
135	1	1	1			
136	1	1	1			
137	1	1	1			
138	1	1	1			
139	1	1		1		
140	1	1	1			
141	1	1				1
142	1	1	1			
143	1	1		1		
145	1	1	1			
146	1	1	1			

Sign	Total	Var.	M	H	L.	minor
123	6	1	4	1		1
132	1	1	1			
133	1	1	1			
147	1	1				1
148	44	4	28	13	1	2
149	5	3	3	1		1
150	4	3	3	1		
151	2	1	1	1		
152	1	1	1			
153	1	1	1			
154	4	1	2	1		1
155	2	2	2			
156	1	1		1		
157	1	1		1		
158	1	1	1			
159	1	1	1			
160	7	1	6			1
161	4	1	4			
162	3	1	2	1		
163	3	1	2			1
164	2	1	1	1		
165	1	1	1			
166	1	1	1			
167	1	1	1			
168	1	1	1			
169	1	1	1			
170	1	1				1
171	1	1	1			
172	1	1				1
173	23	4	12	10		1
176	6	1	2	1	1	2
175	4	1	3	1		
178	3	1	2	1		
181	1	1	1			
182	1	1	1			
185	1	1	1			
174	5	3	3		1	1
177	4	1	4			
183	1	1	1			
186	1	1	1			
187	1	1	1			
179	3	1	2			1
180	2	1	2			
184	1	1				1
190	7	2	3	2	1	1
188	16	2	8	5	1	2
189	15	1	12	2	0	1
191	1	1	1			
192	1	1	1			
193	481	1	278	117	42	44
196	82	1	64	14	3	1
197	75	1	50	22	0	3
198	42	1	29	8	1	4
199	38	1	20	13	1	4
200	34	1	23	7	1	3
201	30	1	20	6	3	1

Sign	Total	Var.	M	H	L	minor
202	21	1	15	3	2	1
203	21	1	15	3	1	2
206	11	1	5	3	1	2
207	9	1		1	1	7
208	6	1	3	3		
210	4	1	2	1		1
211	4	2	1		1	2
217	1	1	1			
218	1	1	1			
219	1	1		1		
194	140	1	57	72	2	9
195	115	1	80	23	4	8
205	15	1	9	3	1	2
209	4	1	1		3	
212	2	1	1	1		
229	2	2	1	1		
227	1	1	1			
230	1	1				1
204	16	1	2	2	12	
213	1	1	1			
214	1	1		1		
215	1	1				1
216	1	1		1		
220	1	1				1
221	1	1	1			
222	1	1	1			
223	1	1		1		
224	1	1	1			
225	1	1		1		
226	1	1	1			
228	1	1			1	
231	120	4	77	22	10	11
232	31	1	22	8		1
233	10	1	10			
234	9	2	5	2	2	0
235	4	1	3			1
236	1	1	1			
237	23	1	8	8	1	6
238	3	1		2	1	
239	3	1	1	1		1
548	2	1		1		1
240	1	1	1			
241	157	1	81	67	5	4
243	6	1	5		1	
244	4	1	4			
245	3	1	2	1		
246	1	1				1
242	43	7	26	10	1	6
247	8	1	7		1	
248	5	1	5			
249	2	1	2			
250	1	1	1			
251	1	1	1			
252	1	1				1
253	19	5	11	5	1	2
254	11	4	3	7		1

Sign	Total	Var.	M	H	L	minor
255	4	1	3			1
256	3	1	2	1		
257	1	1	1			
258	1	1				1
259	1	1	1			
260	1	1	1			
261	1	1	1			
262	116	2	73	23	7	13
263	71	1	14	56	1	
264	70	3	54	10	3	3
265	48	3	35	11	2	
266	15	2	10	3	1	1
267	8	1	1			7
269	3	1	2	1		
270	3	1			1	2
271	3	1	1			2
272	1	1		1		
273	1	1	1			
274	1	1	1			
275	1	1				1
276	1	1	1			
277	1	1				1
278	1	1	1			
279	1	1			1	
280	1	1			1	
281	1	1				1
268	10	6	3	5		2
282	143	6	40	97		6
283	4	2	4			
284	2	1	1	1		
285	1	1	1			
286	1	1	1			
287	1	1				1
288	855	6	472	291	34	58
588	10	2	10			
290	75	1	52	12	3	8
296	4	1	3		1	
297	2	1	2			
298	2	2	2			
299	1	1				1
289	183	3	9	171	2	1
301	77	3	54	13	4	6
302	46	4	30	15		1
304	27	7	13	8	1	5
293	11	2	7	4		
294	6	1	1	3	1	1
295	5	1	1	2		2
310	3	2	1	2		
312	3	1	3			
314	2	2	2			
332	1	1		1		
333	1	1	1			
334	1	1	1			
335	1	1	1			
300	1	1	1			
291	22	1	17	2	1	2



Sign	Total	Var.	M	H	L	minor
292	15	1	12	3		
303	30	3	20	5	2	3
305	23	4	16	5		2
306	13	3	11	2		
307	12	1	11	1		
308	5	1	1	2	2	
309	4	2	4			
311	3	1	3			
313	2	2	1	1		
317	2	2	1		1	
338	2	1	2			
318	1	1	1			
319	1	1		1		
320	1	1		1		
321	1	1				1
322	1	1	1			
323	1	1	1			
324	1	1				1
325	1	1	1			
326	1	1		1		
327	1	1				1
328	1	1	1			
336	1	1			1	
337	1	1			1	
339	1	1	1			
340	1	1	1			
315	2	2	2			
316	2	1	2			
329	1	1		1		
330	1	1	1			
331	1	1	1			
341	127	1	70	29	15	13
342	125	2	80	27	7	11
343	67	5	33	31	3	
344	64	1	49	10	1	4
345	51	1	23	21	3	4
346	17	2	10	4	2	1
347	17	1	13	3	1	
348	16	1	7	6		3
349	12	1	6	6		
350	11	1	5	6		
351	9	3	6	2	1	
354	6	1	3	1	1	1
355	5	1	4		1	
356	5	2	3	2		
357	5	1	4	1		
358	4	1	3	1		
362	3	1	3			
363	3	1	3			
364	3	1	3			
366	2	1	1			1
367	2	1	1		1	
368	2	1	1			1
389	2	1	1			1
373	1	1	1			
374	1	1	1			

No.	Total	Var.	M	H	L	minor
375	1	1	1			
376	1	1	1			
377	1	1	1			
378	1	1	1			
379	1	1		1		
380	1	1		1		
381	1	1			1	
382	1	1				1
383	1	1		1		
384	1	1	1			
386	1	1	1			
387	1	1	1			
388	1	1	1			
360	3	1		3		
365	2	1	1	1		
369	1	1		1		
370	1	1	1			
353	7	1	5	1		1
361	3	1		2		1
371	1	1		1		
390	105	1	65	21	12	7
391	14	1	8	5	1	
392	12	1	10	1		1
393	7	1	7			
394	5	3	5			
395	3	1		3		
398	2	1	2			
396	2	1		2		
397	2	1		2		
499	2	1		2		
399	1	1	1			
400	1	1	1			
401	1	1	1			
402	1	1	1			
403	1	1		1		
404	1	1			1	
405	1	1	1			
406	1	1	1			
408	1	1	1			
409	1	1	1			
410	1	1	1			
411	1	1				1
412	48	4	26	16	3	3
413	38	1		38		
417	15	4	4	4	1	6
418	7	1	4		3	
420	4	1	2	1		1
423	3	2	3			
425	1	1	1			
429	1	1	1			
415	20	1	8	11	1	
419	6	1	2	2		2
421	4	1	2	2		
424	3	1	3			
428	1	1	1			
431	1	1	1			

Sign	Total	Var.	M	H	L	minor
432	1	1	1			
433	1	1	1			
434	1	1		1		
414	33	4	26	5	1	1
416	17	1	11	4	1	1
422	3	1	3			
426	1	1	1			
427	1	1	1			
430	1	1				1
436	6	1	1	5		
437	5	1	2	3		
438	2	1	1	1		
439	2	1	2			
440	1	1	1			
441	1	1	1			
442	1	1	1			
443	1	1		1		
444	1	1		1		
445	1	1		1		
446	1	1	1			
447	33	1	20	6	5	2
448	14	1	9	2	3	
449	6	3	5	1		
450	6	1	3		1	2
451	5	1	4	1		
452	5	1	3		1	1
453	3	1	2			1
454	2	1		1		1
455	2	1	2			
456	2	1	1	1		
457	2	1	2			
458	2	1	2			
459	1	1	1			
460	1	1	1			
461	1	1	1			
462	1	1				1
463	1	1	1			
464	1	1	1			
465	1	1		1		
466	1	1	1			
467	1	1	1			
468	1	1	1			
469	99	1	48	39	8	4
470	23	4	12	9	1	1
471	3	1	1	2		
472	1	1		1		
473	1	1	1			
474	1	1	1			
475	27	1	14	8	4	1
476	22	3	14	6		2
477	3	3	1	1		1
478	1	1	1			
479	1	1	1			
480	1	1	1			
481	1	1	1			
482	1	1	1			

No.	Total	Var.	M	H	L	minor
483	1	1		1		
484	1	1	1			
485	5	1	2	3		
486	4	2	2	1		1
487	1	1		1		
488	1	1	1			
489	1	1		1		
490	3	1	3			
491	3	1	2			1
492	2	1	2			
493	1	1	1			
494	27	6	15	7	5	
495	1	1		1		
496	1	1	1			
498	17	1	7	9		1
497	14	3	4	6	1	3
500	10	1	8	1		1
501	8	1	5	3		
502	2	1	1			1
503	1	1			1	
504	1	1	1			
505	1	1			1	
506	6	1	3	2	1	
526	1	1		1		
507	1	1			1	
508	6	1	2	4		
509	5	1	5			
510	5	1	4	1		
511	5	1	5			
512	2	1	2			
513	1	1	1			
514	1	1	1			
515	1	1	1			
516	1	1	1			
517	18	1	16	2		
518	2	1	2			
521	2	1	1			1
522	1	1	1			
523	1	1		1		
524	1	1	1			
525	1	1	1			
527	1	1	1			
519	2	1	2			
520	2	1	1	1		
528	20	1	10	5		5
529	16	1	9	6		1
530	5	1		5		
531	4	1		1	1	2
532	3	1	1	2		
533	2	1	2			
534	1	1	1			
535	1	1	1			
536	1	1		1		
537	1	1		1		
538	1	1	1			
539	1	1	1			

Sign	Total	Var.	M	H	L	minor
540	1	1	1			
541	8	5	4	1	2	1
542	40	2	20	19		1
543	36	6	17	17	1	1
544	36	1	19	15	1	1
545	9	1	7	2		
546	3	1	2	1		
547	2	1	2			
549	1	1	1			
550	1	1	1			
551	1	1	1			
552	1	1		1		
553	1	1			1	
554	1	1	1			
555	1	1	1			
556	1	1	1			
557	1	1	1			
558	1	1	1			
559	1	1	1			
435	1	1	1			
560	27	1	7	12		8
561	8	1	1			7
562	3	1	1	1		1
564	2	1	1	1		
567	1	1	1			
568	1	1				1
569	4	1	3	1		
570	1	1	1			
571	65	1	47	8	3	7
572	35	1	22	10	1	2
573	24	1	21	2		1
574	17	1	12	4	1	
575	7	1	4	3		
576	5	1	4			1
563	3	1	1	1		1
577	3	1	3			
565	2	2	2			
578	2	1		2		
579	2	2	2			
580	2	1	1	1		
566	1	1	1			
581	1	1		1		
582	1	1	1			
583	1	1		1		
584	1	1	1			
585	1	1	1			
586	1	1	1			
587	1	1	1			

Index To Table 3.1 By Sign Number



Figure 3.1 Typology of Indus Signs.

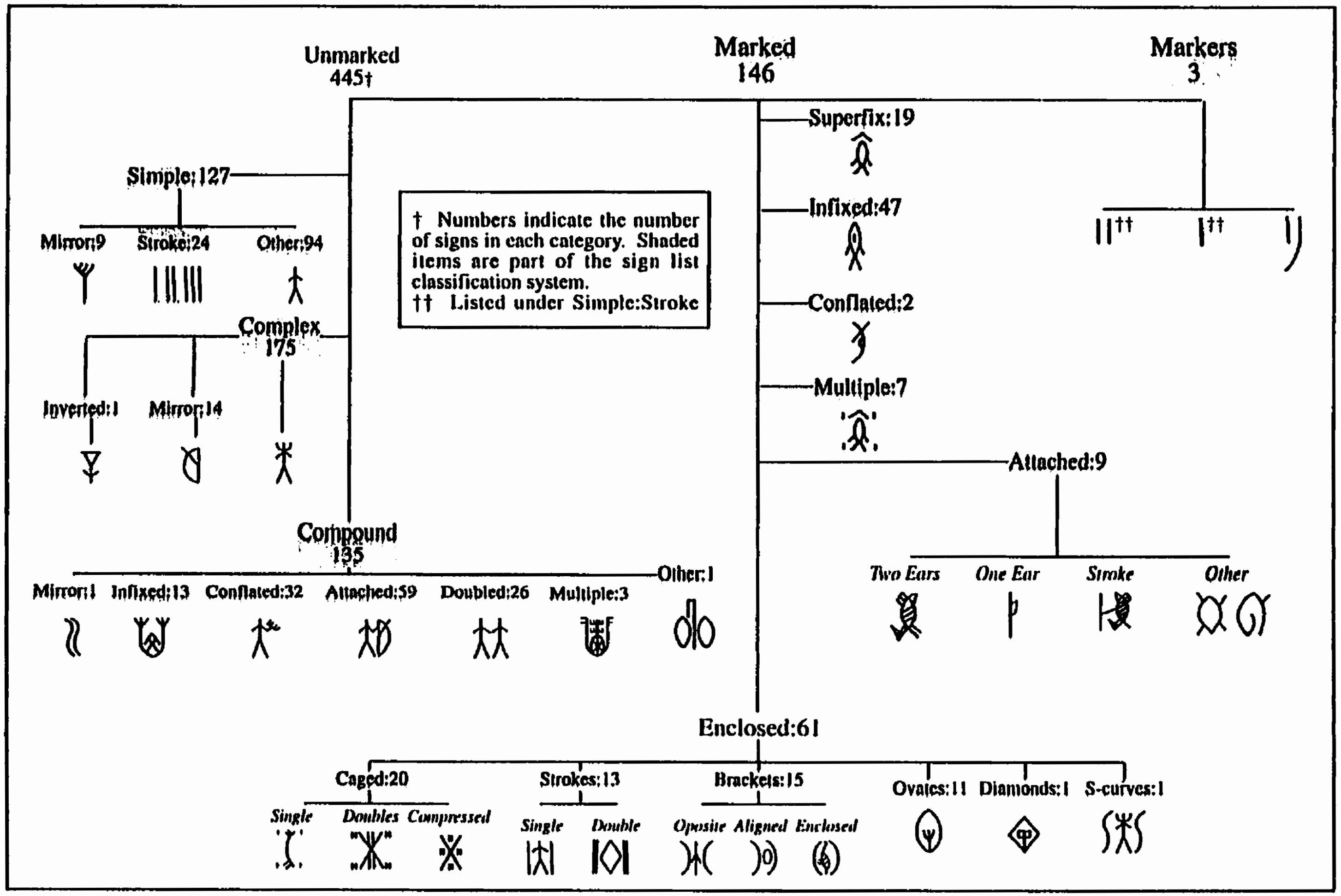


Figure 3.2 Applying Sign Criteria to Signs 5, 8, and 11

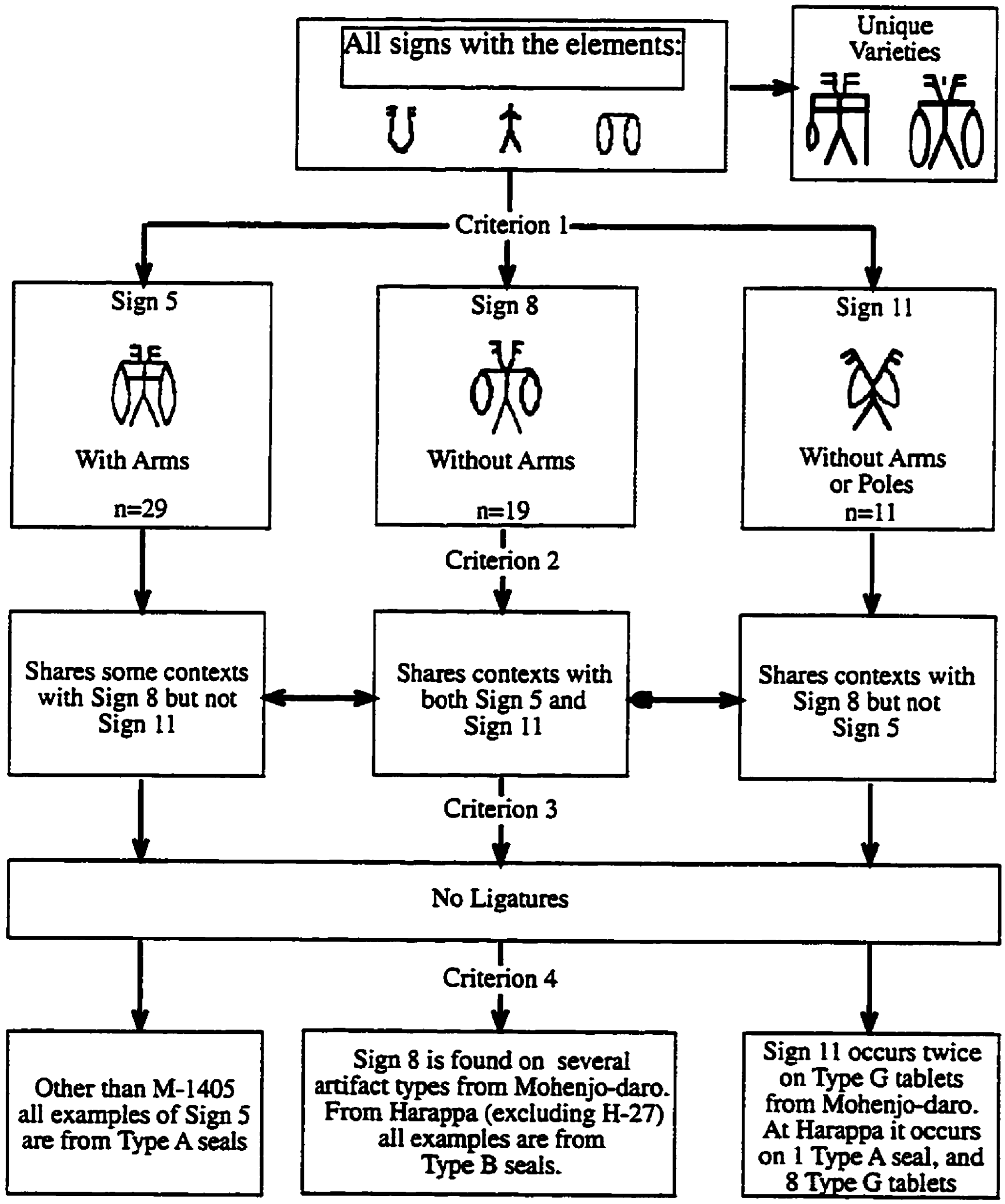
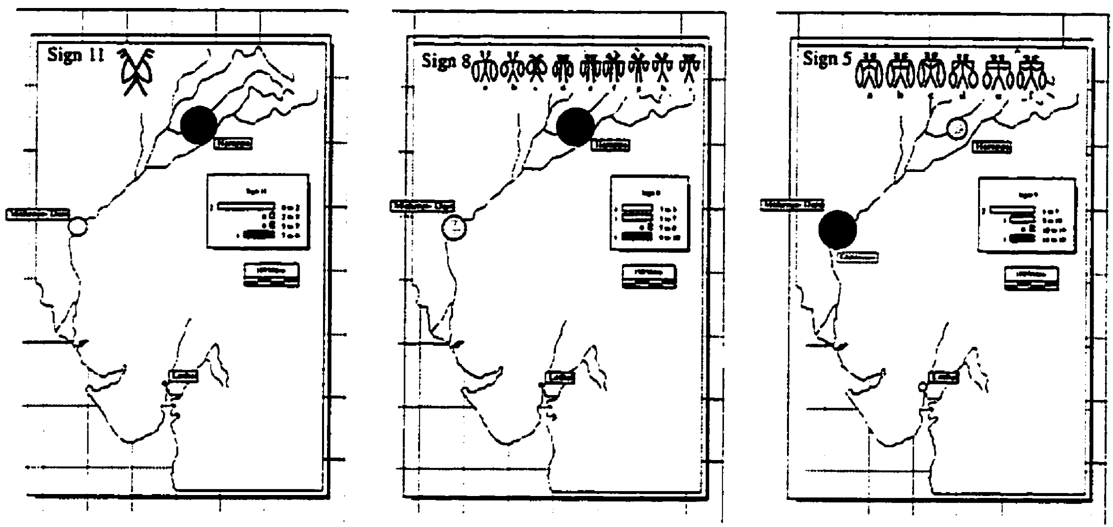


Figure 3.3 Variations in Signs 5. 8 and 11



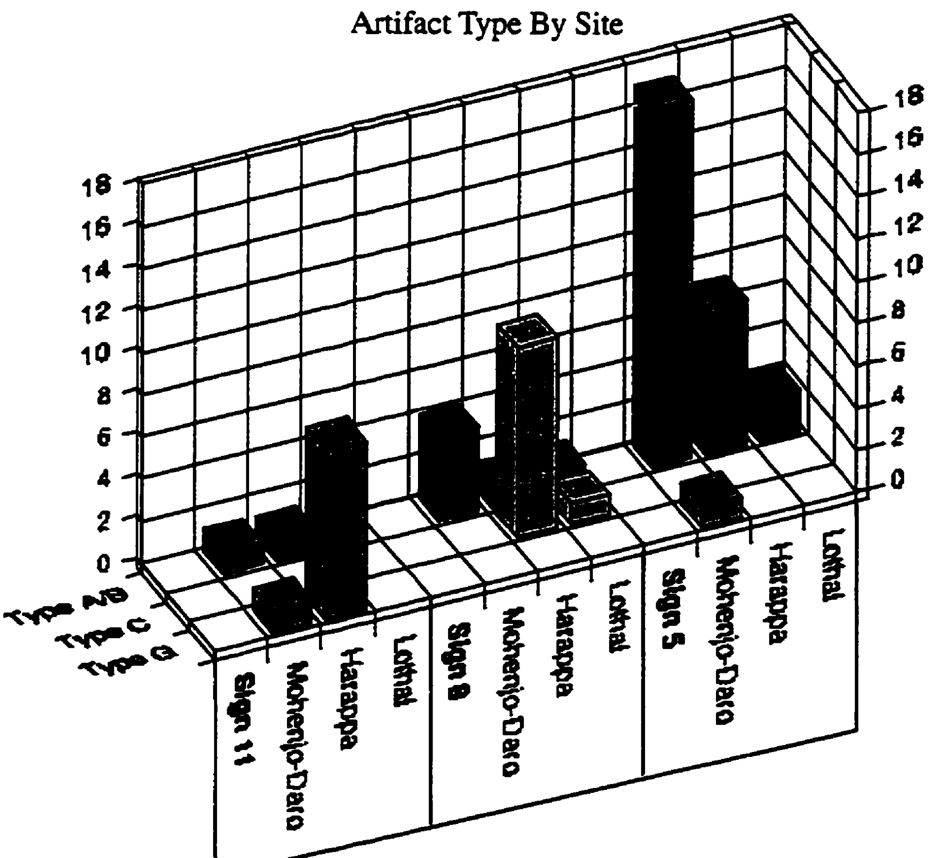
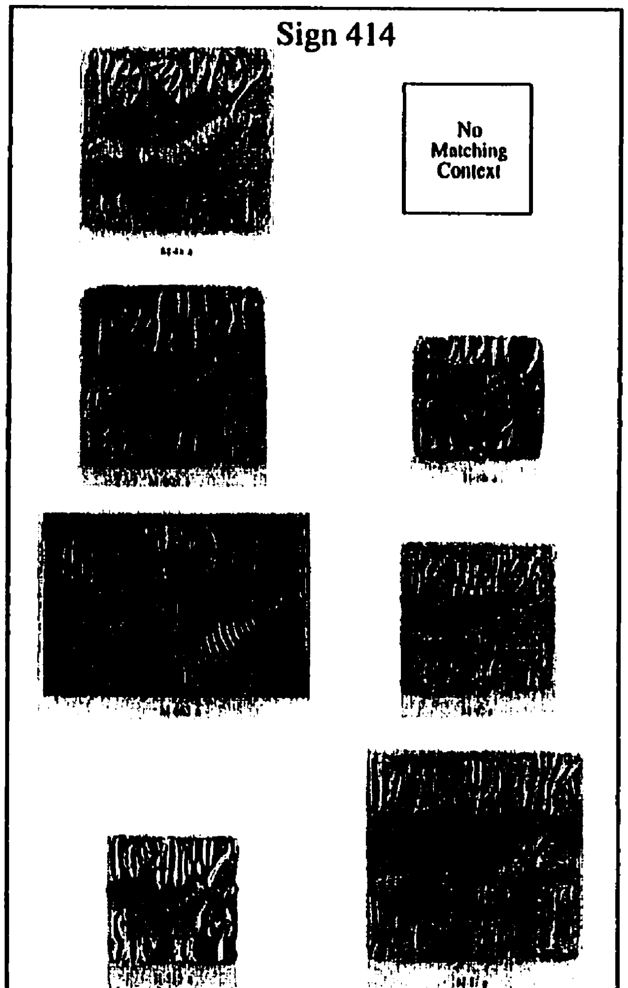


Figure 3.4 Sign Orientation.



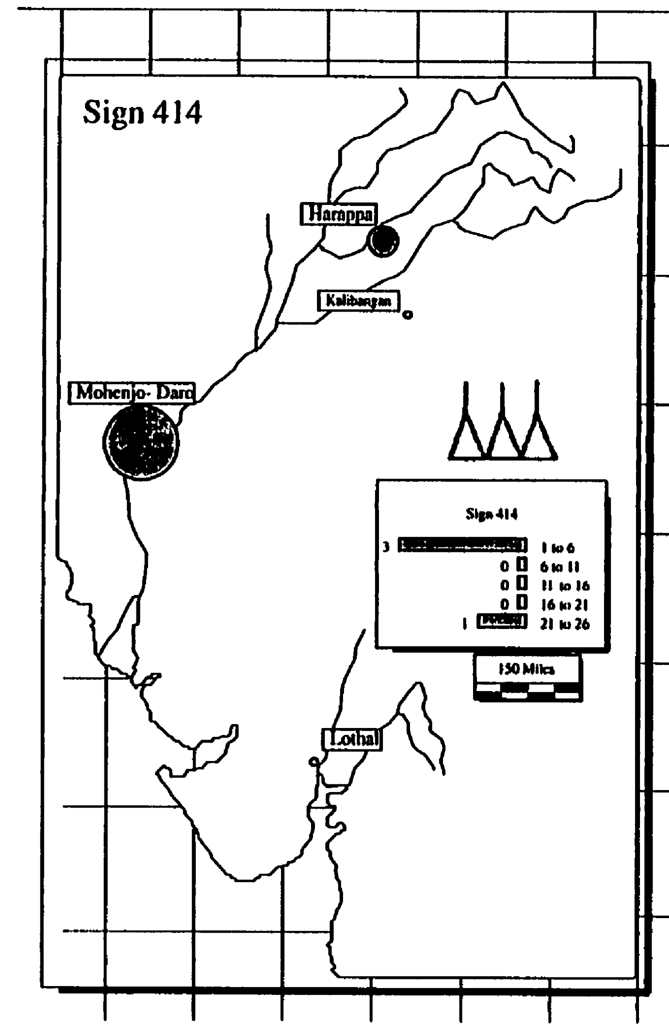


Figure 3.5 Geographic Distribution of the Six Most Common Indus Signs.

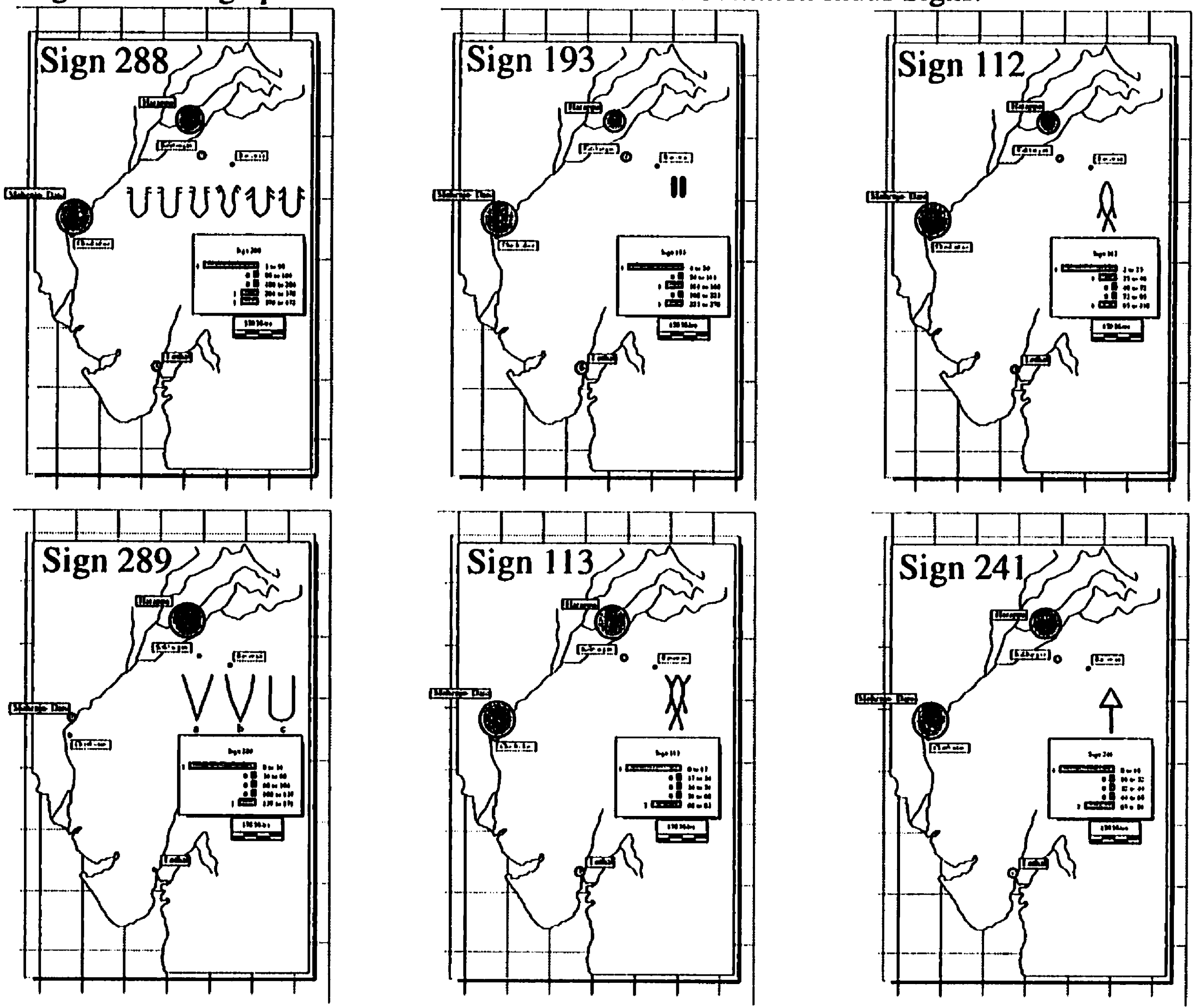
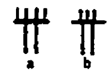
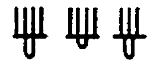
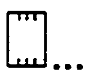
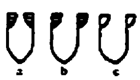


Figure 3.6 Comparison of Sign Definitions From Four Sources.

	Mahadevan 1977	Fairservis 1992	Parpola 1994	Wells 1997		Mahadevan 1977	Fairservis 1992	Parpola 1994	Wells 1997
	261	N-4	341	392		174	None	97	190
	373	F-1	341	348		175	J-8	97	188
	None	None	341	382		175	J-8	97	189
	180	None	217	170		484	J-8	97	191
	180	L-7	217	164		484	J-8	97	192
	180	None	217	160-163 165-169 172		213	None	109	48
	178	I-4, 5	202	436-446		400	E-4	109	247
	244	G-11 to 15	273	528-540		367	J-2	123	308
	352?	None	319	318		371	None	123	311
	358	J-7	319	306		294	None	175	574
	347	J-9	319	305		294	N-3	175	577
	347	J-4	319	303		261	G-8	341	526

Chapter 4
Analyzing Indus Inscriptions

The purpose of this chapter is to examine in detail the internal structures of the Indus inscriptions. This study is based on four major fields of data: archaeological reports, epigraphic analysis, linguistic reconstructions, and the corpus of inscriptions. Reports of excavations of Indus sites consists of efforts by Marshall (1931) and MacKay (1938) at Mohenjo-daro and Vats (1940) at Harappa. These initial excavations of major Indus sites still remain the main sources of archaeological data relating to inscribed artifacts. Major contributions were later made by Dales (1962, 1965, 1971 1979a, Dales *et al* 1977, 1986, 1990, and 1991) and Kenoyer (1989, 1991a and 1991b) at both Mohenjo-daro and Harappa. These reports have made available the first professional excavations at these sites. The summary of the 1986-1990 excavations at Harappa reports the first processualist led multi-disciplinary excavation of a major Indus site. Other major excavations carried out between 1940 and 1990 were either not widely reported, completely unreported, or limited in the scope of their reporting. In addition to the archaeological data, various attempts at decipherment of Indus inscriptions have been published from Waddell in 1925 to Parpola in 1994. These include the work of Mahadevan (1977 and 1986), Parpola (1970, 1975, 1976, 1986a and Parpola *et al* 1969a, 1969b, and 1970), and Knorozov (1968; Knorozov *et al* 1981, and 1984). The third source of data is linguistic reconstructions. These come in the form of a series of journal articles (Zide and Zvelebil, 1976; Zvelebil 1965, 1970, 1972a, 1972b, 1977, 1990; McAlpin, 1974; Andronov, 1970 and 1976), and related publications (McAlpin, 1981; Burrow and Emenau, 1961 and 1968). The final major source of information is the inscriptions themselves. The photographs published by Marshall, MacKay, and Vats are of mixed quality and give only the impressions of the seals. Other inscribed artifacts are occasionally drawn and only photographs of exceptional artifacts were published. No

major improvement in the quality of data occurred until the publication of the Corpus of Indus Seals and Inscriptions (Joshi and Parpola, 1987 and Shah and Parpola, 1991).

All of the publications listed above are used to various degrees in the following pages to argue for my own analysis of the Indus script. In Chapter 1 and 2 the archaeological data were presented in an attempt to show the necessity of considering inscriptions as having a function, in a social economic sense, as well as bearing some message in the unknown language of the Indus people. Knowing the use an artifact was put to gives us a clue to the subject matter of its inscriptions. Readings of inscriptions should in some way coincide with the expectations raised by their archaeological contexts. In Chapter 3, I created a sign list and computer data base which brought together groups of inscriptions with the same signs. The sign typology and sign list were used to set up the parameters of the analysis presented in this chapter, and in Chapter 5.

There are still several questions about the Indus script which need to be answered before the analysis of its formal structure can be undertaken. First, in which direction (left to right; or right to left) are the inscriptions intended to be read in? As with most of the fundamental questions about the Indus script there is no simple answer. Parpola (1991: 64-67) points out that, although the normal direction of reading was right to left, both left to right and boustrophedon are recognizable. Figure 4.1 (a, b, and c) presents three seal impressions which demonstrate that the Indus script was normally read from right to left. The first example (M-735) shows crowding at the left of the inscription where the carver ran out of space. The second example in Figure 4.1 (MacKay 1938: Pl.LXXXIV:83) has a large unused space at the left of the second line of script. This space would have been left over at the end of the inscription in a right to left system. The third example (MacKay 1938: Pl.XCVI:521) contains a two line inscription, with the first line situated to the extreme right of the space available for carving. This inscription can be reconstructed by analogy with the top line to the right. For examples of

boustrophedon inscriptions see M-66 and M-892. For these reasons Indus inscriptions will normally be read right to left in the analysis presented in this paper.

The question of what writing system is used in the Indus inscriptions affects structural analysis, and this question needs to be resolved before the results of structural analysis can be interpreted. Coe (1992:26) tells us:

> For the purposes of analysis, every speech-dependent, visual system of communication has two dimensions: the *semantic*, the dimension of "sense" or meaning, and the *phonetic*, the dimension of sound. Scripts vary in the amount of emphasis which they give to one or the other of these dimensions. Modern alphabetic scripts, for instance, lean heavily towards the phonetic, but the earliest form of the most ancient script in the world, the Sumerian of southern Iraq, is strongly semantic.

Scripts are usually divided into four classes: alphabetic, syllabic, logo-syllabic, and logographic. There are examples of intermediate systems. The number of signs in a given script gives a clue to the class of script we are dealing with. For example, known alphabetic scripts have 20 to 36 signs and syllabic scripts have 40 to 87 signs. More than 100 signs indicates that the script is logographic or logo-syllabic (Coe, 1992:43). The Indus script has about 600 signs (very close to Sumerian) and is therefore most probably a logographic or logo-syllabic script.

These general descriptions of ancient scripts do not address issues of the mechanical details of sign use. Many ancient scripts employ special sets of signs, known as determinatives, which are not pronounced when inscriptions are read and consequently have no linguistic counterparts. The purpose of these special case logographs is to classify words in order to avoid confusion over homophones, or to identify the gender of objects, or to classify objects. For example, in Egyptian hieroglyphic writing: "open", "hurry", "mistake", "become bald", "light", and the city of Hermopolis are all written identically except for their final sign (a determinative in each case) which clarifies their meaning (Zauzich 1992:28-29). Figure 4.2 shows the way in which signs of several ancient scripts can be categorized. These scripts, while all logo-syllabic, have very different strategies for combining elements into word. Egyptian hieroglyphic has four

distinct types of syllabic signs and relies heavily on the use of logograms and determinatives. Maya hieroglyphic does not have true determinatives, but instead uses phonetic complements to clarify the meaning of logograms. Maya too has uniliteral and biliteral signs, and some CV syllabic signs can occasionally be used for their vowels with the consonants left unpronounced. Sumerian cuneiform is a logosyllabic script, but syllabic spellings represent a relatively small part of these inscriptions. When this script was adopted by the Akkadian scribes syllabic spellings became much more common and the use of logographs diminished. Ugaritic cuneiform is alphabetic, but derived from its Akkadian predecessor.

There is no reason that the Indus script could not be another variation in the application of the basic elements as given in Figure 4.2. Which elements are present in the Indus script, and how they are combined, cannot be known with confidence. We can be fairly certain, however, that the Indus script will use some or all of the elements used in other ancient script. The strategies employed in combining these elements vary, but the basic inventory seems limited to those defined in Figure 4.2.

What kind of system does the Indus script use? It is probably a logosyllabic script because there are about 600 Indus signs. Yet the details of its form cannot be known simply on the basis of this identification. Figure 4.2 compares the structure of four ancient scripts; all are logo-syllabic, but no two have identical structures. There does seem to be a fixed number of components (phonetic, logographic, and determinative signs) used in ancient scripts. Taken individually, signs can vary in function. Signs sometimes are used as word building signs or phonetic complements, or sometimes as logograms or determinatives. In undeciphered scripts this can lead to a great deal of confusion about sign function and meaning. We can expect that the Indus script will have some or all of the sign classes identified in Figure 4.2. We can also expect that some signs will have more than one function (syllabic and logographic). In order to identify these signs and assess what their functions might be, detailed contextual analysis

is needed. The occurrence of signs in several contexts (for example: ) must be considered in the light of Figure 4.2, and in terms of the morphology of the root language.

The form a script takes (how it combines the different types of signs) will be influenced by the language it is expressing, and in the case of the Indus script this language cannot be identified with certainty. Structural analysis gives patterning of signs which can be compared to various languages to see if the results of structural analysis match the morphology of the language in question. The circularity of this process is what has led to the more than 50 decipherments of the Indus script offered to date. Evaluation of possible languages from the patterns of sign usage is complicated by the presence of unpronounced signs (determinatives) and reinforcing signs (phonetic complements).

Other important questions are: what is the subject matter of the inscriptions, and is subject matter uniform for all inscriptions? The answer to the second part of this question is a demonstrable no. Later in this chapter *Column Analysis* will demonstrate that inscriptions from different classes of artifacts (Chapter 2) have different sign sequences and inventories. The first part of this question is harder to resolve. We know from tags that seal inscriptions were used to control the flow of goods within the Indus trade network. Seal inscriptions might contain inventories of trade goods, names of trading partners, destinations, and/or protective incantations. All these possibilities are equally valid. Tablets might be votive offerings. If so, these inscriptions might contain prayers or the names of petitioners and gods. If tablets are exchange tokens they might have quantities, commodity names or family (clan, polity) names. Inscribed utilitarian artifacts from other contexts are often marked with the owner's name and the purpose of the artifact. Different classes of artifacts probably have different subject matter.

The final and most difficult question to answer about the Indus script is: what language does it express? Several candidates have been proposed. Sumerian, Akkadian, Indo-European, Ural-Altaic, Munda, Austronesian, Sino-Tibetan, Dravidian (Brahui and

Proto-Dravidian), or an unknown extinct language have all been proposed as the language of the Indus script. There are strong reasons to doubt that most of these candidate languages were spoken within the Indus valley at the appropriate time (6500 to 1200 BC).[1] Sumerian has been proposed by several researchers (Waddell 1925; Kinnier Wilson 1974). The best evidence against Mesopotamian languages is the existence of an Akkadian cylinder seal inscribed 'Shu-il-ishu, Meluhha interpreter' (Parpola 1994:131).[2] Parpola sees this as "highly significant in showing that the Language of Meluhha differed so fundamentally from the contemporaneous languages of the Near East that an interpreter was needed" (Parpola 1994: Figure 8.4 , 131-3). This argument strongly reduces the probability that Akkadian was *the* Indus language, and makes Sumerian and Elamite somewhat less likely. Most of the other proposed languages were either not present at the time depth required by the archaeology (pre 4500 BC), or reconstructions of their proto forms indicate that they lacked the lexical sophistication of a culture as complex as the Indus civilization (Fairservis 1992:14-23). The modern lack of a sophisticated vocabulary is a negative argument and is therefore inherently weak. The addition or loss of lexical items is an expected result of changes in technology. The possibility of extensive systematic lexical loss, however unusual, is nevertheless not a valid reason for excluding languages from consideration.

Parpola (1994:125-175) examines the modern and ancient distributions of languages from Anatolia to China, with specific care being given to the evidence from the Indian sub-continent. He comes to the conclusion that "the Harappan language is most likely to have belonged to the Dravidian family" (Parpola 1994:174). Work by McAlpin (1981) with Elamite languages, specifically his reconstruction of Proto-Elamo-Dravidian (PED), has defined a genetic relationship between Proto-Dravidian (PDr) and PED. Zvelebil (1972b) was the first to suggest that the Iranian plateau was the homeland of the

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1 As defined by the archaeological evidence (Kenoyer 1991:333)

2 See Parpola, Parpola and Brunswig 1977 for a discussion of Meluhha and its identification with the Indus valley.

Indus people. McAlpin's (1981) work reinforces this possibility. McAlpin dates the split between Dravidian and Elamite between 5500 BC and 3000 BC. McAlpin (1981:134) tells us:

> Separation could not have been earlier than 10,000 BC and more likely would be much closer to 6000 or 7000 BC. Given the numerous cognates for animal husbandry and the close association of animal husbandry with agriculture in West Asia, the unified culture must also have taken part in the agricultural portion of the revolution.

PED and PDr have an inventory of cognates that suggest they were part of a unified culture at a time when these lexical items were coming into use. This sets an earliest limit on the date of separation at 6000 to 7000 BC. The latest limit is suggested by the lack of a shared PED and PD word for writing. The words for writing in PED (*tal ' to push in') and in PDr (various words meaning 'to paint' or 'to draw')[3] suggest that the split between these languages was pre-literate. McAlpin (1981:134) places the split no later than 3000 BC . Further, McAlpin (1981:134) suggests that the fifth millennium BC is the most likely period of separation, noting that this fits well with the archaeological data but gives no details.

McAlpin's (1981) argument is detailed and points to a very ancient and definable relationship between Dravidian and Elamite that is not demonstrable for any other language family in the list of proposed Indus languages.

Indo-European has quite a different relationship to Dravidian having several clear cases of borrowing. The most convincing argument against Indo-European as being the language of the Indus people is made by Parpola (1994:167). Parpola presents the work[4] of Tikkanen which examines the presence of the "type A retroflex system" (Parpola 1994: 167). Tikkanen maps the presence of the first person plural pronoun (inclusive and

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[3] There is one word in Tamil *urutu* 'to write, paint, draw; become indented by pressure' that suggests this question is not fully resolved

[4] This work is not published outside of Parpola, so we are essentially dealing with Parpola's summary of Tikkanen.

exclusive)[5] which is a Dravidian sub-stratum present in the Indo-European languages of the Indian sub-continent. Parpola (1994:167) describes the relevance of Tikkanen's work to the identification of the Indus language as follows:

> Tikkanen's analysis suggests that Dravidian had once been spoken also in all those parts of the type A retroflex system area which are Indo-Aryan-speaking now. This distribution makes Dravidian the most likely language to have been spoken by the Harappans

Figure 4.3 combines the boundaries of Dravidian language groups and the type A retroflex system. It is clear from this map that the Indus valley falls within the area defined by Tikkanen. Parpola's conclusion that all Indo-European speakers within the type A retroflex system area were influenced by Dravidian speakers in a way that implies population infusion is reasonable, but not conclusive. Much of the argument for Dravidian as the Indus language is based on this type of suggestive but inconclusive evidence. Yet no other proposed language within this limited geographic area shows borrowings of the type and with the same time depth as those borrowed into Indo-European from Dravidian. While this does not demonstrate that Dravidian is the language of the Indus inscriptions, it does demonstrate that Indo-European came to the Indian sub-continent at a time when Dravidian was in widespread use. Given the time depth of the Indus civilization, and the relationship of Dravidian to both proto-Elamo-Dravidian and Indo-European, there is little doubt that the Indus people were Dravidian speakers. The exact form of Dravidian spoken by the Indus People is not known nor is it reconstructable from the inscriptions as they stand. The best starting place for matching the structures evident in the inscriptions to a language is proto-Dravidian (PDr), and that assumption is the basis of Chapter 5.

The History of the Structural Analysis of the Indus Script

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[5] we='you and I' and we='all of us'

Knorozov (1968) was the first researcher to use computer technology in an attempt to define the internal structures of the Indus inscriptions. His work defines the linguistic structures and patterns of sign replacement, using a computer program and, "About 350 signs [that] compose the Proto-Indian alphabet" (Knorozov: 1968: 13). As Chapter 3 demonstrates, this is too few signs to account for all the significant sign variations recognizable in Table 3.2. Regardless of the shortcomings of his sign list, Knorozov's analysis manages to define an impressive set of structural elements that were previously unknown -- blocks in his terminology. Knorozov (1968: 10) offers the following interpretation of his results:

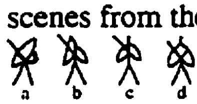
> Theoretical considerations led to a supposition that according to the technique used the blocks will represent not only word forms plus the corresponding word- and form- building affixes, but those plus prepositions, particles, conjunctions etc. and even unchangeable attributes (if they are present) devoid of their morphological formats. Such attributes are practically indistinguishable from subordinate elements in unknown texts.

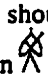
In short he was able to define syntactic elements through the analysis of sign order. He further breaks blocks into constant, variable, and semi-variable signs. He gives the following description of these elements (Knorozov 1968: 11):

> Constant signs are retained in all cases when a given block occurs, they render root morphemes in all probability. Three groups are distinguished among variable signs. The first group is composed of properly variable signs (the most flexible). They occur at the end of the blocks, i.e. in the position usually occupied by form-building suffixes and other morphological formants. Other variable signs should properly be called semi-variable, because they occupy an intermediate place between the variable signs proper and the constants (they are closer to variable signs). The semi-variables signs are subdivided into two markedly different groups. The semi-variables of the first group always precede the variable signs proper (if these are present), and immediately follow the constant signs, i.e. they occupy a position usually taken up by derivative suffixes. The semi-variables making up the second group always precede the constant signs; together they compose a combination which remains stable within one microparadigm.

See Figure 4.4 for his examples of several microparadigms. Knorozov goes on to describe the place of numerals in his system identifying them both as group II semi-variables and as counts of various units of measure. To this point Knorozov's method is

robust. He reads the texts as proto-Dravidian or Proto-Indian in his terminology. His Proto-Indian readings of the inscribed artifacts, however, are very different in content. For example: 2802 sealing  is read (right to left) by Knorozov (1968:27) as *tantu ika-ka*-ka ma tadi saru kanta* '[day] of the [god] -guardian, honored leader, lightning of the cloud worthy hero'. This reading is typical of Knorozov's results. Chadwick (1987:19) tells us that the early decipherments of Linear B texts "...had sometimes yielded weird names, which their authors claimed as gods and goddesses."

Knorozov uses a loose version of the direct historical method combined with the scenes from the tablets and seals to identify many of the Indus signs. For example, sign 2  is identified as follows (Knorozov 1968: 21)[6]:

> 1.1 The Proto-Indian figures include personages which have pictorial correspondences among the signs of the Proto-Indian inscriptions. Thus, an impression from a trihedral object (H 305) depicts a male personage with a stick on his shoulder and a cup at his feet; this personage corresponds to the sign  from the inscriptions. The images of deities with the stick on the shoulder were retained in the late Indian iconography (Wilkins, 1882,p.67). Thus, in such a posture is sometimes represented the god Yama (as a number of other gods-Bhairrava, etc.)... It is possible, that both the figure on the trihedral object and the corresponding sign denote a deity which -- in some aspects -- could be regarded as one of the "predecessors" of Vedic Yama or some other god with the analogous function.

Knorozov's (1968) leap from structure to meaning without consideration of syntax and without setting up expectations of what the readings might be, given conclusions about subject matter, weakens the credibility of his readings. Why pre-Vedic (Indus) inscriptions would consist primarily of the names of Vedic gods is not addressed by him.

Knorozov's attempt at deciphering the Indus inscriptions is typical of many proposed decipherments. While his structural analysis is very useful, the extension of these results to readings is mostly guess work. Consequently his readings are often nonsensical. As late as 1981 (Knorozov, Al'bedil', and Volchok) Knorozov was offering refinements to his system and readings of Indus inscriptions. Despite the problems with

6 The object identifed as H 305 has no relation to the H-305 in the photographic corpus.

readings, Knorozov's structural analysis offers a very good starting point for further attempts at structural analysis.

In 1970 Mahadevan (1970, 1977, and 1986) began his examination of the Indus script. He connected his structural analysis to Dravidian morphology in 1970, and in 1977 Mahadevan published *The Indus Script: Texts, Concordance and Tables.* This was the first attempt at a computerized sign list and font, and brought together for the first time large numbers of replacement sets. As demonstrated in Chapter 3, Mahadevan's sign list (417 signs) was too generalized to allow detailed structural analysis. Yet Mahadevan was able to demonstrate both large scale structures in the script and a link to patterns in Dravidian morphology.

The next attempt at formal structural analysis was carried out from 1970 through 1982 by Koskenniemi and Parpola (1979, 1980, and 1982), Koskenniemi (1981), and Koskenniemi, Parpola and Parpola (1970, 1973). Their publication of *Corpus of Texts in the Indus Script* in 1979 mimicked Mahadevan's corpus in many respects. First, they used a computer based font for their sign list (401 signs). Second, they provided a concordance of related inscriptions using their sign font. There were some notable differences in their sign list compared to Mahadevan's. Koskenniemi *et al* discuss these differences, arguing that several signs be collapsed because of their occurrences in near identical contexts. Notable among these sign were the graphs  and . The collocations of these signs is discussed in Chapter 3 where it is shown that there are significant differences in their collocations, when all contexts are considered. Conversely, they argue for the separations of several sets of allographs which Mahadevan had grouped under one sign.[7] These minor differences aside, both Mahadevan and Koskenniemi *et al* found large scale structures which they related to Dravidian morphology. Both combined all inscriptions, regardless of artifact type, into one analytical set, and both used very generalized sign lists and sign replacement fonts. The

[7] Many of these suggestions were used in the construction of Table 3.1.

net effect of this approach is that much of the fine detail of sign behavior is lost, or confused. Further, structural analysis based on this generalized data can only deduce large scale structures in the inscriptions.

In 1994 Parpola made another attempt at the sign list and a more refined form of structural analysis. While his sign list is even more generalized (398 signs), he gives all claimed allographic variations. Sign 91, for example, has 41 variants and Parpola (1994: Figure 5.1) gives all 41 variants and cites one example for each. While this is not enough information to analyze parallel inscriptions, it is the first real attempt to address the enormous variety of signs found in Indus inscriptions. Parpola (1994:69-101) has formalized and rigorously defined the process of structural analysis. Parpola's structural analysis begins with *grid* analysis. Parpola (1994:89) explains:

> The rows and columns of the grid correlate the syntagmatic and paradigmatic relationships of single signs and sign sequences. The word *syntagm(a)* means 'a string of elements forming a syntactic unit'... A Paradigmatic relationship is the 'the relationship of substitution between one linguistic unit and other comparable units at a particular place in a structure'.... In other words, the investigation of the syntagmatic relationships determined from these grids leads to the establishment of particular 'functional' of 'grammatical' units, whereas the investigation of paradigmatic relationships leads to the establishment of the range and structure of these particular 'functional' or 'grammatical' units.

Using parallel inscriptions Parpola defines three *slots* in his grid (I through III), which he believes hold distinct elements of syntax (Figure 4.4). His slots are not the equivalent of the fields in Figure 4.6, although there is some agreement in the placement of the boundary between Fields I and II. Using these slots as the basic units he compares them to the few very long Indus inscriptions noting that these long inscriptions are comprised of strings of sign sequences found in shorter inscriptions. These long inscriptions consist of three to five slots which Parpola groups into cycles. Parpola (1994:90) believes that "a major syntactic boundary is likely to occur between the cycles". In brief, the short inscriptions are single syntactic units, while long inscriptions are combinations of several of these units.

Parpola goes on to relate his slots and cycles to words and sentences, using the Dravidian (S)OV syntactic order. He works out a paradigm of inflectional suffixes (including case endings) (Parpola 1994:94),[8] and gives the Soviet (Knorozov 1968:81) 'micro-paradigm of variable signs'. In summarizing what is known about the Indus inscriptions Parpola makes the assumption that most seal inscriptions are noun phrases. His analysis of what is possible is based on this assumption. For example, he states "a good candidate for a verb would be something found at the end of longer text that does not occur in shorter ones" (Parpola 1994:96). As shown in Chapter 2, seals were meant to be combined to form long inscriptions, but sometimes only one seal impression is needed. The short inscriptions may therefore contain any of several elements of syntax, not just nouns, and long inscriptions contain all necessary elements of syntax. Inflectional paradigms based on the flawed assumption that these are only nouns are bound to have serious functional problems.

Fairservis (1992:117) notes that the shortness of Harappan texts "makes the identification of syntax difficult if not impossible since sentences per se do not exist in the texts discovered to date." This seems to be a controlling premise rather than a satisfactorily based conclusion. Fairservis does not consider any of the very long seal texts nor the Type N.a tags from Lothal, Kalibangan and other sites. These texts clearly contain enough signs to allow the analysis of syntagmatic relationships as defined by Parpola (1994). Fairservis presents a list of identifications of signs and readings of inscriptions which reflect his belief that the seals were sewn to clothing as a means of identification. To Fairservis (1992) the Indus inscriptions contain the name, title, status, lineage, or occupation of the individual within the social and political, and economic sectors of the culture. He suggests that "the tablets were used as badges or even marriage *tali.*" (Fairservis, 1992:5). Like Knorozov, the readings proposed by Fairservis are often cryptic or even nonsensical (Kelley and Wells 1995:22).

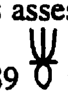
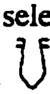
8 He abandoned this paradigm in 1969 because of some inconsistences but mentions it again as the first results of his structural analysis.

The Structure of the Indus Inscriptions

Building on the work of Parpola, Mahadevan, and Knorozov, my goal is to use a modified form of structural analysis to examine the details of sign relationships. I have concluded (on the basis of multiple seal impressions on tags and the length of Type G inscriptions) that Type A/B seals with short inscriptions (5 signs or less) are fragments of messages that need to be recombined. Longer inscriptions (6 signs or more) are more likely to contain whole inscriptions or at least larger fragments. Figure 4.5 shows both a long and short Type A seal inscription. The inscription on M-37 consists of three signs that are repeated on M-650, but with four additional signs (also see Figure 4.1d).

Examining Parallel Inscriptions

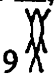
Column Analysis

Column analysis is a method whereby the relative position (left or right) of a sign (in relation to all other signs with which it occurs) is assessed. For example, does sign 414  consistently locate left or right of sign 189  when they occur in the same inscriptions? These relationships can be used to arrange signs in columns. Initial attempts to use all Indus inscriptions to generate a matrix of all Indus signs sorted by relative positioning within texts resulted in several noticeable groups for which relative positions could not be resolved. These unresolved relationships pointed to a need for the selection of a more cohesive group that could be used to establish a *base line* which the rest of the inscriptions could be compared to. For this purpose I selected the Type A/B seal inscriptions from Mohenjo-daro which contain sign 288 . There are 327 inscriptions which match this description. The result of comparing the relative positions of signs within this limited set of inscriptions was the elimination of most questionable relationships (Figure 4.6). The signs in Figure 4.6 are arranged more or less by *Set*

vertically through the matrix. Horizontal (relative) locations of signs reflects their sequence of occurrence within inscriptions containing sign 288 as specified above. Columns are grouped into 3 fields (I-III) and eight sub-fields (A-H). These divisions reflect the syntagmatic relationship between groups of signs within inscriptions. It is my contention that the fields mark the subject, object, and verb boundaries within inscriptions, and that the sub-fields mark the boundaries between sub-elements of syntax. Column 8 contains signs which cannot be placed in Field II or III, and likely contains signs that belong to both fields. Some signs appear in more than one field and this may be an indication that either they have multiple values or are syllabic signs. All inscriptions contain one or more fields dependent on the number of signs in the inscription.

Defining the field and sub-field units for a specific inscription can be accomplished by looking for sequential breaks in their column numbers. Table 4.1 compares seven inscriptions.

Breaks in the sequence indicate boundaries between syntactic units. In some cases these breaks are less well defined (M-595) and in these situations parallel inscriptions must be examined to clarify the boundaries of syntactic units. In the case of M-595 it is not clear if sign 78 should be part of Field II or Field III based on its column number alone. Through the examination of the 12 other inscriptions from Mohenjo-daro which contain the 288/1/264 sign sequence we can determine that sign 78 is in Field II. For M-289 sign 78 is in Field III as part of the sign 288/78 pairing. Here sign 78 replaces for signs 1/264. It seems likely that sign 78 is a logograph while signs 1/264 are syllabic signs. This interpretation assumes that sign 288 is the case ending. It is also probably a syllabic sign because case endings in Proto-Dravidian tend to be monosyllabic. I propose that any sign that occurs alone in a field, or collocates with sign 288 as the only signs in a field, is a logograph.

Many signs occur in more than one field, most often Field I and either Field II or Field III. For example sign 469  occurs in Field I and Field III, but not in Field II. Other signs are restricted to specific fields. For example, sign 119  occurs only in Field II.

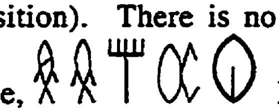
The process of identifying syntactic units for specific inscription is expedited in many cases by analyzing the signs in the inscription for their column numbers. Further, many uncertain boundaries can be clarified by examining parallel inscriptions, which can provide clearer examples of internal divisions. The analysis of inscriptions using these techniques yields a list of Indus words which can be identified at the Subject-Object-Verb level.

Before examining the content of the various fields and the arrangement of signs within fields it is necessary to examine some general characteristics of the syntax and morphology of Proto-Dravidian. McAlpin (1981:55) tells us:

> It is difficult to speak meaningfully of a syntax which can be labeled Proto-Dravidian. Most Dravidian languages have almost identical syntactic structures, but the problem is that so do Indo-Aryan Marathi and Singhala... In other words, there is a syntactic pattern typical of Dravidian languages, but it is very difficult to determine how much of it is inherited and how much is areally influenced.

These problems aside, McAlpin (1981:55) describes the general pattern of Subject-Object-Verb as common to most Dravidian languages. I will assume for the purposes of this discussion that the Indus inscriptions are expressing a form of Proto-Dravidian that utilizes the Subject-Object-Verb order. Further the Tamil pattern of modifier preceding the modified is assumed for the inscriptions.

McAlpin (1981) gives several schematics of noun and verb phrase construction for PDr that will be used for comparative purposes in the following discussion. He (1981:55) gives Clause/Genitive + Numeral + Adjective + Noun (case) + Postposition + Clitic as the usual pattern of noun phrase construction. Nouns themselves are constructed as follows: root (+ derivational augment(s)) (+ morphological augment(s) + case (+

postposition). There is no reason to equate signs in a suspected noun phrase (for example,  M-900) directly to these elements of syntax, but the script should reflect the language that it expresses within the parameters of its own logosyllabic system.

The Dravidian verb "has a central place in the grammars of all Dravidian languages, derivationally, morphologically, and syntactically ... The Dravidian verb is a complex combination of agglutination and inflection" (McAlpin 1981:41). Verb construction follows two related patterns. One is a simple agglutinative: stem + medial + ending; and the second is more terse: stem + unitary medio-ending.

The implication for interpretations of Indus inscriptions is that these morphological units might be the intra-field units defined through column analysis. The patterns are complicated by ø endings and other subtle morphological features. "After the verb base, all of the morphology is uncomplicated agglutination" (McAlpin 1981:41). That is, the stem goes first and all additional morphological elements follow in their appropriate forms. The important effect is that agglutinative elements, especially case endings, are more frequent in Dravidian than is any single verb or noun stem. Additionally, there is a Proto-Dravidian system of personal pronouns to consider.[9] The details of stem morphology could also complicate equating of specific signs to specific morphological features. The point of Figure 4.2 is that signs will most likely be syllabic, logographic, determinatives, and/or phonetic complements. The important question is how would a Dravidian language be expressed using these components?

Field Shifting

Fish, as represented in the Indus script, consist of 31 separate signs which combine into 46 different combinations. In its simplest form, sign 131 , it is rare

[9] Including Tikkenin's type A retroflex system, the first person 'we' Indo-Aryan substratum proposed by Parpola 1994: 167 (Figure 4.3).

occurring only twice on pots from Kalibangan. The common variant, sign 112, and 113 have wider distribution (Figure 4.7). This basic sign undergoes elaboration creating 29 variants.[10] Variants have different positional characteristics dependent on the form elaboration takes. The first set of additions to the basic signs (112 and 113) consist of both horizontal, vertical, and diagonal infixing of the fish's body, resulting in three separate signs.[11] These five basic signs can then receive additional markings. In some cases this results in a movement left in column positions through the inscription.[12] For example, if sign 114 has cage markings added to form sign 119 the column number changes from 4 to 7. This pattern is repeated for signs 116 and 122, with column numbers of 5 and 7 respectively. This is a phenomenon I call field shifting and it is not limited to fish signs, nor to the *cage* markings alone. Brackets, enclosures, ovates, diamonds, and occasionally doubled cages enclose[13] other signs changing their position in both directions in Figure 4.6.

The implication of field shifting is that these markings and additions to the basic signs change their syntactic function. In the example above the cage might change a syllabic sign to a logograph (stem), analogous to transforming a noun stem to a verb stem. An example can be seen in Tamil: *kal* (vb.) (DED1090) 'to learn, study, practice (as arts)', *kallan* (n.) 'unlearned, illiterate person', *kalvi* (vb.)'studying, learning'. In this example the addition of *-an* and *-vi* changes both the meaning and the part of speech or tense of the verb respectively. In a parallel example, the freshwater shark (*Wallago attu*) is called *valai* in Tamil. *Valai* also means 'net' while *valaiyan* glosses as 'fisherman'. Morphological elements in the language are manifested in the script with a series of markers. The sign typology (Figure 3.1) shows the complexity of the Indus marking system. The 146 *marked* signs can be divided into 11 types (Figure 3.1). This defines

10 Set 8, signs 112-146 excluding 123, 132, and 133
11 Signs 115, n=74; 116, n=55; 117, n=42.
12 Signs 118, n=21; 119, n=11; 120, n=8; 122, n=7; 124, n=5; 145n=1.
13 See Figure 3.1

the Indus marking system as represented in the photographic corpus. We cannot identify with confidence which specific sign or marking is the equivalent of *-an* or *-vi*, but we can say that markings seem to have the same morphological effect as elements identifiable in Tamil and other Dravidian languages. Several suggestions have been made by Knorozov (1968), Mahadevan (1973:50), and Parpola (1994:96-97) of how various noun cases may be represented in the inscriptions. In most approaches to the Indus script marked signs are unexplained and suspected case markers are usually identified as independent signs.

While the identification of syntactic elements and in some cases sign classes[14] can be made fairly securely, the next step, assigning values to signs, is more difficult. In Chapter 5, readings of some signs are suggested but the analysis of inscriptions is not far enough advanced to derive readings directly from the inscriptions alone. Therefore, the focus of the following discussion of fields is limited to more general identifications of functional characteristics as related to Proto-Dravidian syntax and word construction.

Field Contents

In the following discussion I will examine each of the fields in detail and suggest some possible identifications of their function in the inscriptions. For the moment we are still discussing the inscriptions analyzed to create Figure 4.6, although all inscriptions follow similar patterns. I assume hereafter that fields I-III approximate the subject, object, and verb components of Dravidian syntax. Numeric (simple stroke) signs occur in the inscriptions (Figure 4.6) in various positions in texts, but are most commonly found in Field II. Numbers are among the few forms of adjectives that are reconstructable for PDr. McAlpin (1994:40 cf. Table 1.7) tells us that "An invariant compounding base is readily reconstructable for one through eight." He gives the following reconstructions:

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[14] Logographic, syllabic, or determinative.

	Compounding		Nouns	
#	Base	Variants	Human	Neuter
1	or	oru, or	oruvanre(m)	
			orutti (f)	
	on			onre
	okka		okkanre	
	ol			
2	ir	iru, ir	iruvar	irante
3	mu(N)	mu, muC	muvar	munre
4	nal	nan		nalke
5	cayN	cayn		caynte
6	care	care		care
7	ez	ezu, ezu		eze
8	en			entte
9	tol	ton		

Field I

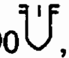
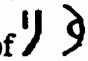
Field I is defined as the sign clusters which end with the markers ', '', and .[15] As with much of the morphological patterning in the inscriptions, hard and fast rules of usage are scarce. Sign 196 ', seems to function both as a Field I terminator and as a more general word separator. There is no clear context where sign 196 is being used as a numeral. Sign 193 '' is found used as a field I terminator and a numeral. Evidence for the numeric context comes from the comparative structural analysis of the following inscriptions given in Table 4.2

These distributions prompted Parpola (1979:19-20) to create separate allographic entries in his sign list for sign 199 in the top, middle, and bottom registers. In the case of sign 199 context is more important than vertical placement. The third common Field I terminator is sign 231  and  which occur 120 times in the inscriptions. Allographic variations are great, but structural analysis shows all variants in identical contexts. The following signs often collocate with Markers (signs 199, 196, and 231): 341  342, , 543 , and 571 . Some examples have longer sign sequences but often terminate with one of these four signs and any of the three Markers. Problematic contexts aside, markers are frequently the most obvious feature in an inscription. There are large numbers of

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[15] Signs 196, n=82; 193, n=481; and 231, n=120.

inscriptions containing markers and they teach us much about allographic variation in the Indus script -- especially variation in signs 341, 342, 543, and 571.

There is a strong relationship between sign 571  and signs 290 , 291 , and 292  and sign 231. In inscriptions where Field I consists of  (231/571) then the following sign is always 290, 291, or 292. These sorts of sequences suggest that some signs in columns 1 and 2 (Figure 4.6) are Field I suffixes in the same way that column 8 (Field II) and columns 14, 15 and 16 (Field III) are. Combinations of Markers with signs 290, 291, and 292 and Field I sign clusters then may be marking aspects of Indus names, titles and locatives.

Mahadevan (1973:50) pointed out that 75% of Old Tamil male names end with *-an* . Most of the rest of these male names end with *-i* or *ai.*[16] Female names commonly end with *-al* . These endings may be the equivalents of any of 290-292 or the markers. The structure of Field I is suggestive of the same mechanisms of construction as observable in Field II.

Locatives are more complex. Location nouns are inherent locatives. While there are no locative cases in PDr there are specific agglutinative elements which mark locatives. McAlpin (1984:37) gives common Proto-Dravidian locative postpositions as follows:

**-in*	Comparative
**-(t)tu*	fixed in space
**-(k)ku*	location in time, or motion towards
**-ul*	inside, within
**-il*	place, house

Another possible component of Field I is personal pronouns. McAlpin (1984:37) gives the following list of personal pronouns for PDr:

**yan*[17]	1s 'I'
**ni*	2s 'you'
**nim*	2p 'you'
**tan*	3s/p 'self/selves'

[16] see Chapter 5 for a discussion of sign 288 as **-ay* (**-ai*).

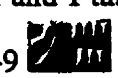
[17] see Chapter 5 for a discussion of sign 342 as **yan*.

**yam* 1p exclusive 'we'
**nam* 1p inclusive 'we'

We can expect that all of the elements described above will be present in various combinations and forms in Field I. Sign 342 is identified in Chapter 5 as **yan* the first person oblique ending, and the personal pronoun 'I'. This raises the possibility that 341  342, , 543 , and 571  serve as personal pronouns in Field I.

Field II

Following the model of PDr syntax outlined above we can expect that Field II will contain the grammatical objects of the inscription (possibly the names of commodities of trade). Proper nouns would likely be represented using logographs which are representative of these objects. While the identification of many Field II logographs are currently not possible, some of the identifications of previous researchers seem plausible (Fairservis 1992; Knorozov 1968, Parpola 1994).

For example, sign 112  has often been identified as a fish. Parpola (1994:179-197) identifies this sign as the logograph *min* 'fish' and points out its homophonic relationship to *min* 'star' and *min* 'to glitter, shine, flash (of lightning)'. He proposes that its primary meaning in the Indus inscriptions is 'star' (Parpola 1994:182). He points out that the fish sign occurs on Type H and I tablets from Harappa accompanied by signs ||||| or ||||,[18] and he reads seal H-9  as seven star and equates 'seven stars' with the Pleiades. I agree that sign 112 is most likely a representation of a fish. Given the archaeological context (economic) of seals and tags it seems more likely to me that in this case a fish is just a fish. Supporting evidence comes from the detailed analysis of fish remains from Harappa (Belcher 1991). Belcher (1991:118) reports: "Fish appear to have been an important protein source for some populations of the Harappan civilization." Most fish remains were freshwater catfish and carp. However, there were remains of

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18 Parpola (1994:194) discribes them as a"Possible recording of fish offerings'.

marine catfish (Belcher 1991:113) which points to the trade of fish between Harappa and coastal sites.

The purpose of this discussion of fish is to expose the different levels at which Indus signs can be interpreted. First, given the assumption of PDr as the language of the script, the syntactic structure suggests that sign 112  is part of a noun or noun phrase. Second, contextual analysis tentatively identifies 112 as a logograph.[19] Its archaeological context suggest that seal inscriptions should have an economic subject matter. Excavations at Harappa have demonstrated that fish were an important source of protein and were traded within the Indus valley. The final step, equating sign 112 with a specific word for fish (*min*), is not possible because we do not know if the sign represents a specific species of fish or fish in a general sense. The selection of *min* as a value for sign 112 seems arbitrary and premature. There are 17 listings for 'fish' in the Dravidian Etymological Dictionary (Burrow and Emeneau 1960). While *min* (DED 4060, Ta.) means 'fish' in a general sense, *eri-valai* (DED 764, Ta.) refers to the *Wallago attu* specifically.[20] *Kayal* and *cel* (DED 1050, Ta.) are specific terms for 'carp' in Tamil.[21] Any of these are just as valid a reading for sign 112 as *min*. Additionally, any reading of sign 112 must also account for the other fish signs and the effects of markings (field shifting) and elaboration.

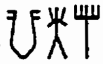
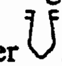
Filed III

This field should contain verbs and verb clauses according to the model of PDr syntax given previously in this chapter. What structural analysis gives us is a series of sign clusters which can be identified as either verbs or nouns. Methods of constructing verbs are agglutinative and typically verbs consist of root+augment+case+(pp/cl). This

19 Sign 112 occurs in contexts where it is the only sign (H-9) other than stroke signs in sn inscription.

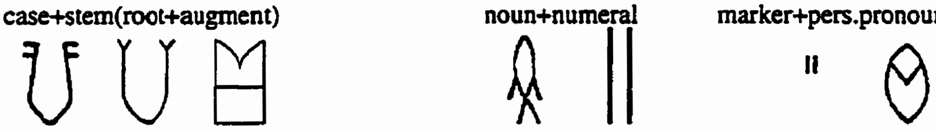
20 *Wallago attu* accounts for 42% of the fish remains found in the 1986-1990 excavations of Harappa (Belcher 1991:113).

21 Carp represent 25.5% of Belcher's (1991) sample.

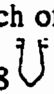
model fits well with the results of structural analysis. For example, the Field III sign cluster  can be interpreted as a stem (root+augment)  plus the case marker .

Conclusions

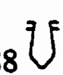
Given the analysis presented in Chapters 3 and 4 the inscription M-221 can now be analyzed as follows:



	Field III			Field II		Field I	
	case+stem(root+augment)			noun+numeral		marker+pers.pronoun?	
M-221							
sign #	288	305	497	112	195	193	341
column #	13	12	10	6	5	0	-

While many uncertainties remain regarding readings of specific signs, the ability to identify the part of speech of a given sign cluster limits the phonemic values it can have. For example, sign 288  has been identified as a verbal case marker and therefore must have one of the following values:

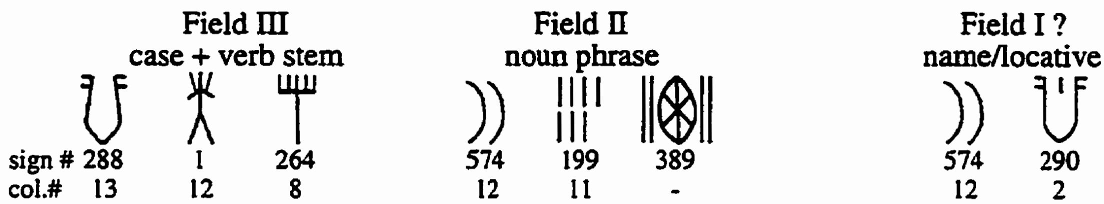
1s	**-en*
1p	**-em*
2s	**-i/-ay*
2p	**-ir*
3s (masc)	**-anre*
3s (non-masc)	**-(V)te*

These sorts of limits can act as criteria for the verification of future readings. Sign 288  can be expected to have one of the values listed above, and readings which do not match this list can be discounted.[22]

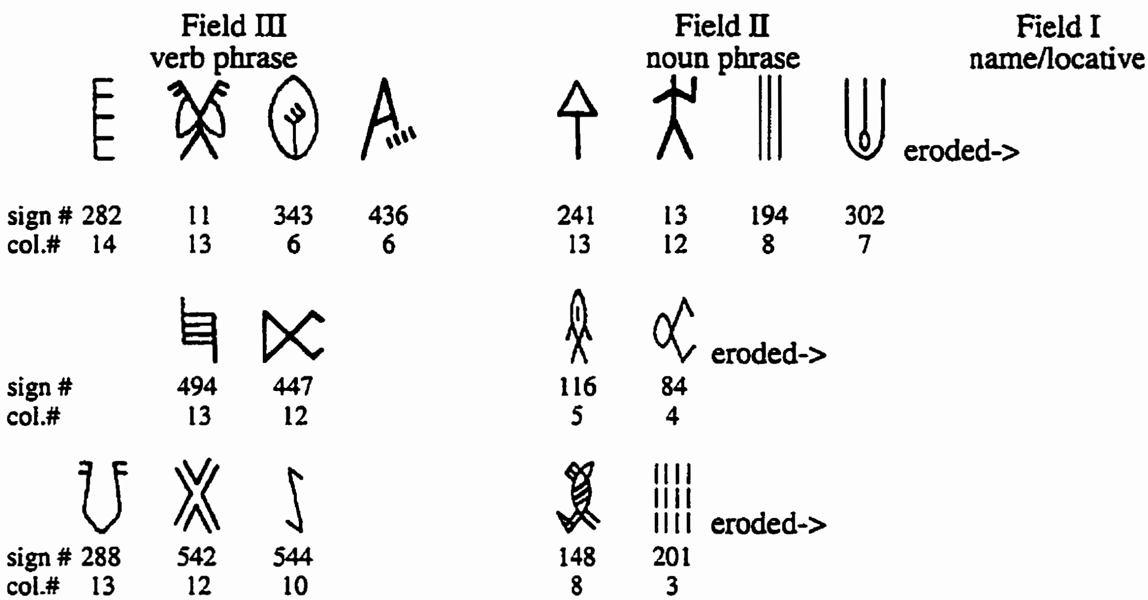
Column analysis can be extended to other types of inscriptions. The tablet M-495 is inscribed on three sides. The following sign sequence is found on side B:

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22 see Chapter 5 for sign 288 as **-ay*.



Tags can also be analyzed in this way. The tag M-425 has three seal impressions as follows:



Breaks in column sequences mark the boundary between parts of speech, but the application of these methodological techniques is not advanced enough for this to be a simple mechanical process. The extension of column analysis beyond its original boundaries requires some detailed knowledge of the inscriptions.

As Figure 4.8 demonstrates, the utilization of the methodology described in this chapter allows the definition of sign function on several levels. At the grossest level inscriptions can be broken fields (I-III). These elements can be identified as subjects, objects, or verbs because of their order in the inscriptions. The definition of these elements is a necessary first step in the analysis of an inscription. Verification that these elements are functional units used in Indus writing can be seen in Figure 4.8a, where sign

clusters can be found as interchangeable sets which maintain their field positions in all inscriptions in which they are found.

Column analysis further differentiates sub-structures within fields. These sub-structures can be identified in some cases as logographic or syllabic in function. The same elements have morphological functions as well (Root (stem+medial), case marker, postposition) and these can be ascertained through the positional analysis of sign sequences (Figure 4.8b).

The continuous interaction of different lines of analysis is necessary during the process of decipherment. It requires the researcher to shift among data sets while allowing the results of ongoing analysis to interact. Epigraphic analysis is therefore a synergetic and dialectic process in which multiple lines of evidence are used to understand the meaning of inscriptions. The process of decipherment is complicated by our impoverished data and the lack of certainty with respect to key issues. When ancient scripts are deciphered, major advances are usually the result of the discovery of bilingual texts or very long inscriptions-- neither of these are available for the Indus script. The decipherment of Maya hieroglyphic texts was stalled for years because of misunderstanding of the subject matter and mechanics of the script.

Table 4.1 Column Numbers and Sign Frequencies Compared

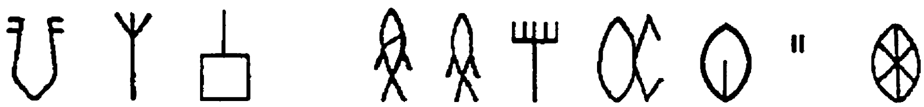
Field III | Field II | Field I

M-595



	Field III			Field II	Field I	
sign #	288	1	264	78	193	342
column #	13	12	8/4	8	0	[9]
frequency	855	62	70	63	481	125

M-900



	Field III			Field II					Field I	
sign #	288	262	469	117	112	264	85	386	193	342
column #	13	12	9	6	6/4	4	4	1	0	[9]
frequency	855	116	99	42	187	70	64	1	481	125

M-1353



	Field III			Field II
sign #	288	414	412	292
column #	13	9	8	2
frequency	855	33	48	15

M-671



	Field III				Field II		
sign #	288	542	544[23]	148	113	114	292
column #	13	12	10	8	6/4	4	2
frequency	855	40	36	44	179	127	15

M-281



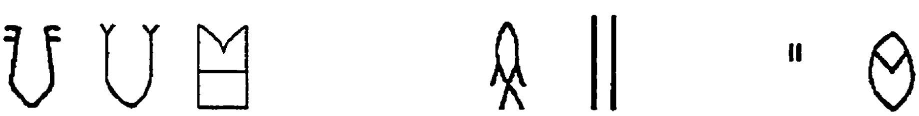
	Field III			Field II	
sign #	288	414	486	123	393
column #	13	9	8	7	3
frequency	855	33	4	6	7

M-289



	Field III		Field II	Field I	
sign #	288	78	119	193	341
column #	13	8	6/4	0	-
frequency	855	63	187	481	127

M-221



	Field III			Field II		Field I	
sign #	288	305	497	112	195	193	341
column #	13	12	10	6/4	9/5	0	-
frequency	855	23	14	187	115	481	127

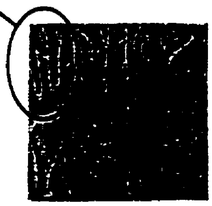
23 cf. sign 549

Table 4.2 Sign 199 in Numeric Contexts.

	Field III			Field II			Field I	
M-32								
sign #	*262*	*197*					*193*	341
M-803								
sign #	*262*	*202*					*193*	341
M-658	eroded	eroded	eroded					
sign #				*262*	*202*	*199*	*193*	341
H-141								
sign #	*281*	*195*	*572*	*262*	*202*	*199*	*193*	341
H-472								
sign #	*288*	*476*	*572*			*199*	*193*	342

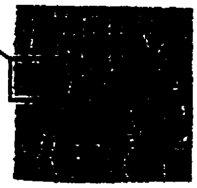
Figure 4.1 Space Utilization and Direction of Reading.

a. Crowding



Runs out of space before reaching the end of the seal and shifts orientation and alignment of last sign.

b. Blank space



Space left over at right end of second line of text.

c. Two lines



Sign pair normally found at right of single line inscriptions.

d. Double inscription



Second line of text is found alone on its own seal M-201.

e. Misplaced Postposition



Sign 3 is usually located left but adjacent to sign 288 (Table 2.1).

Figure 4.2 The Function of Signs in Four Ancient Scripts

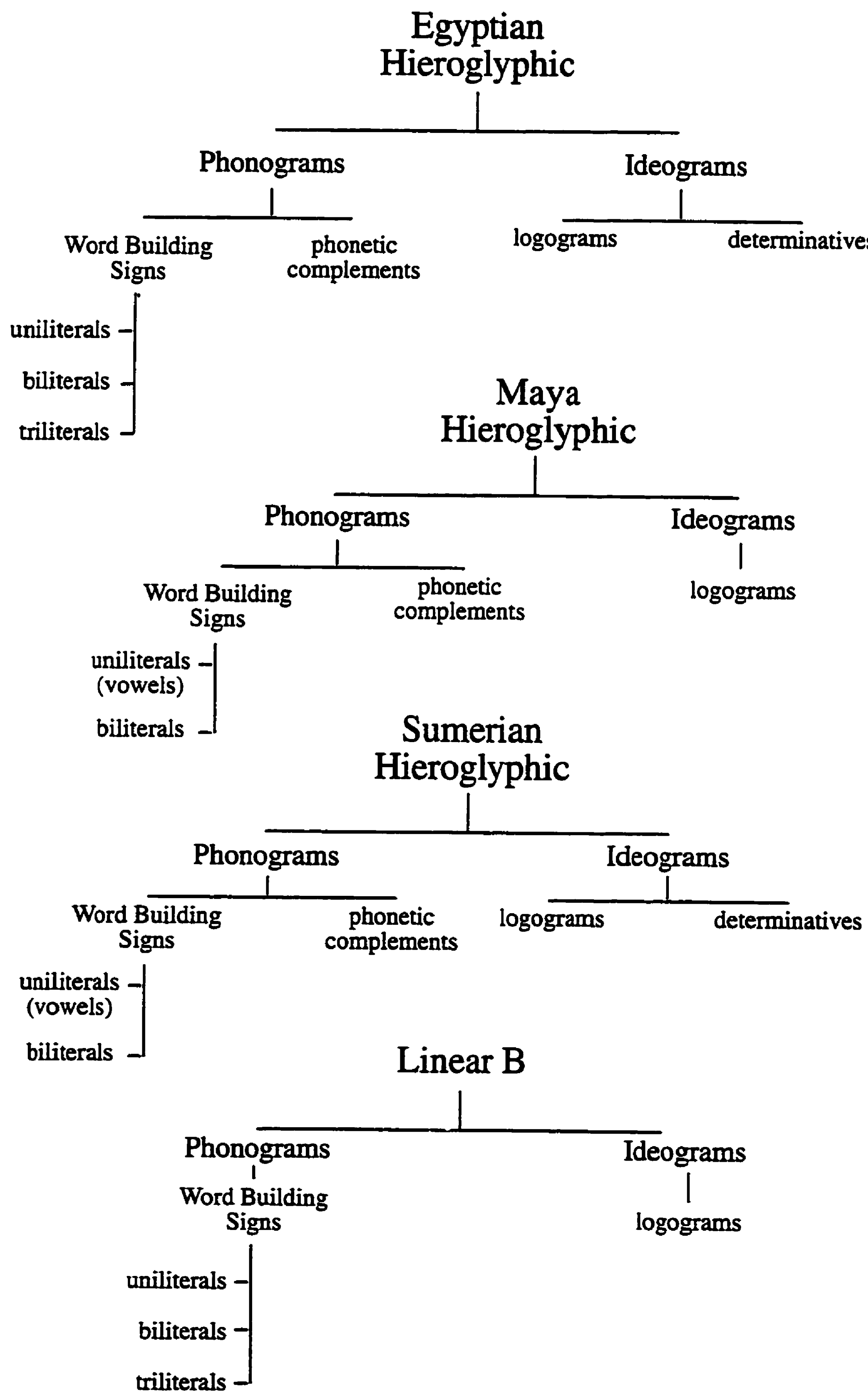


Figure 4.3 Map of Dravidian language boundaries and the extent of the type A retroflex system (after Parpola 1994: Figures 8.8 and 9.3)

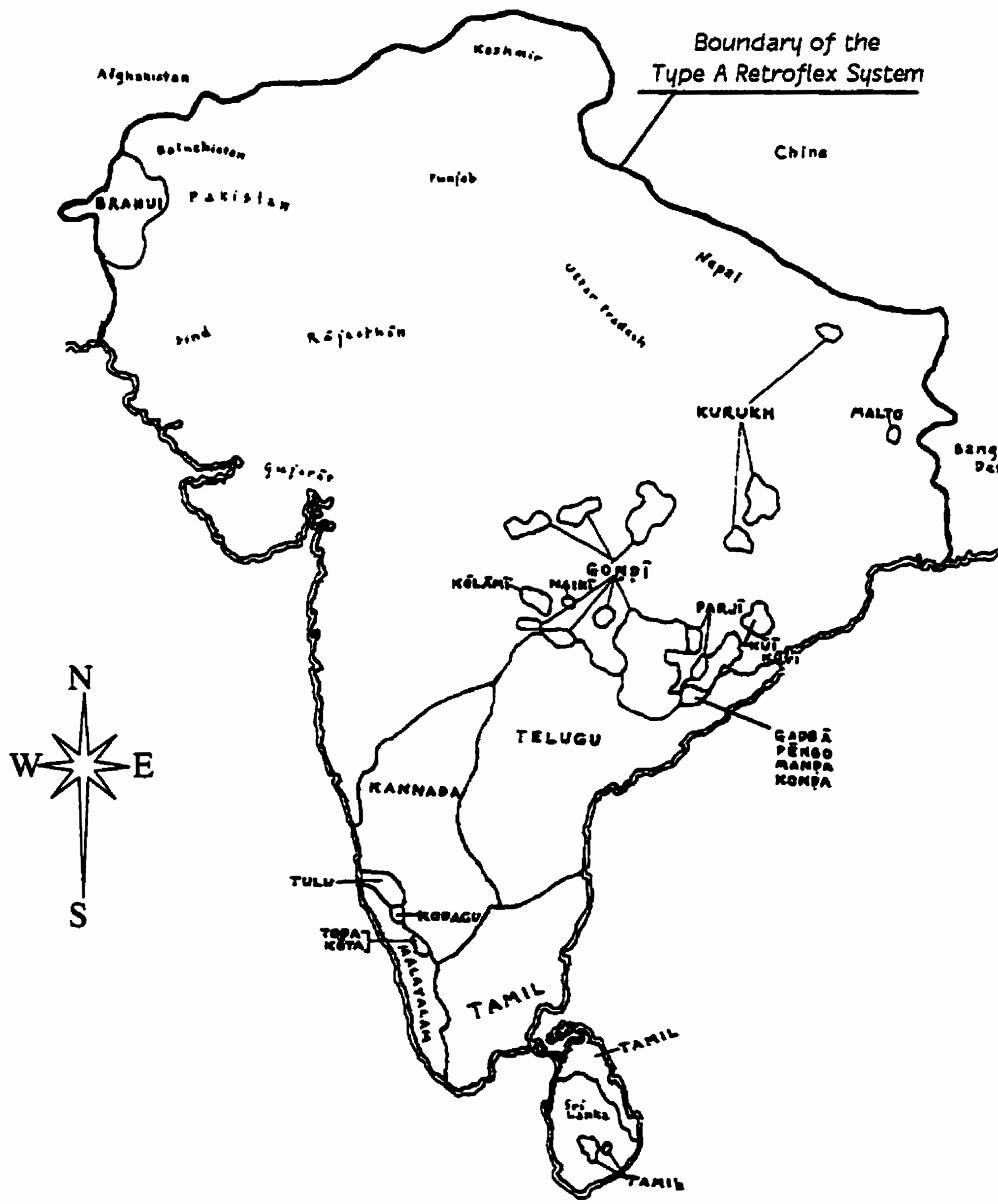
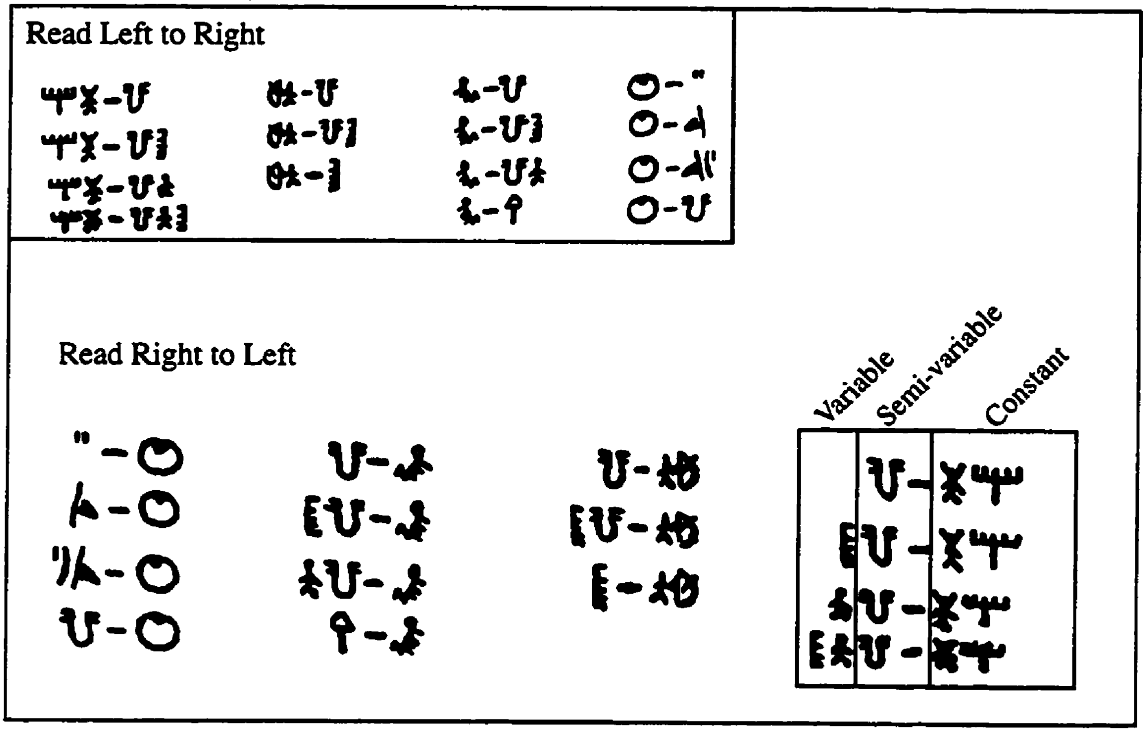


Figure 4.4 Previous Methods of Structural Analysis.

Knorozov's Microparadigms (1968: 12).



Parpola's Slots (1994:89 Fig. 6.1)

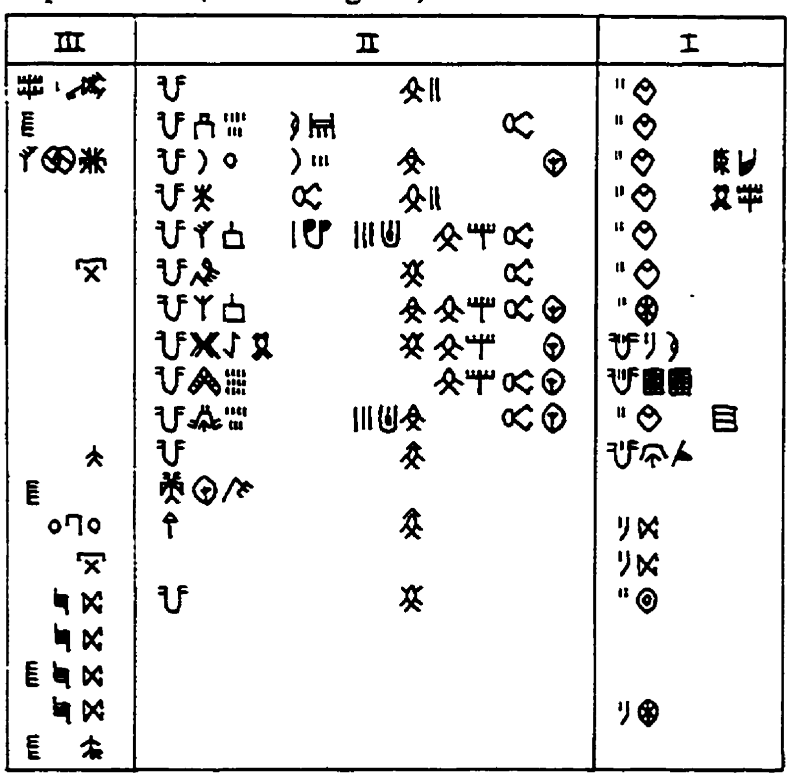
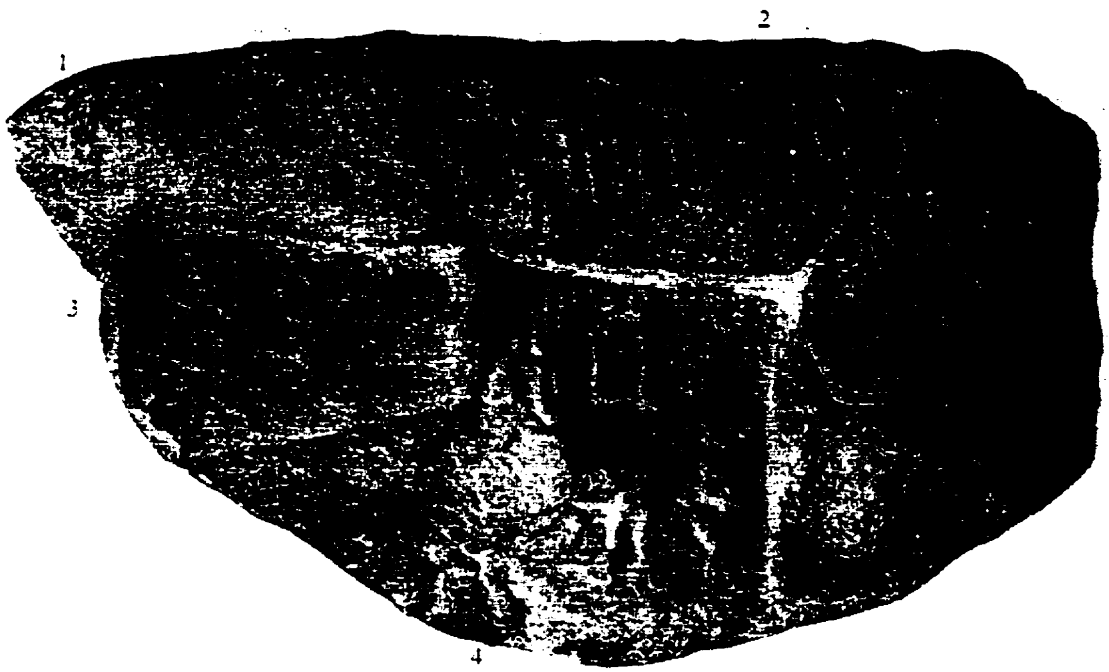


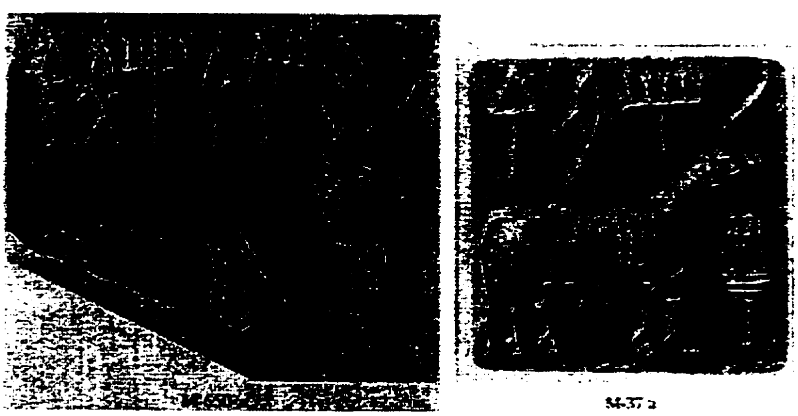
Figure 4.5 Tags and Segments.

A. Multiple seal impressions on a load marker from Kalibangan



K-89 A 1-4

B Seal inscription containing segments (M-37) of longer seal inscriptions (M-650)



M-37 a

Figure 4.6 Column Analysis.

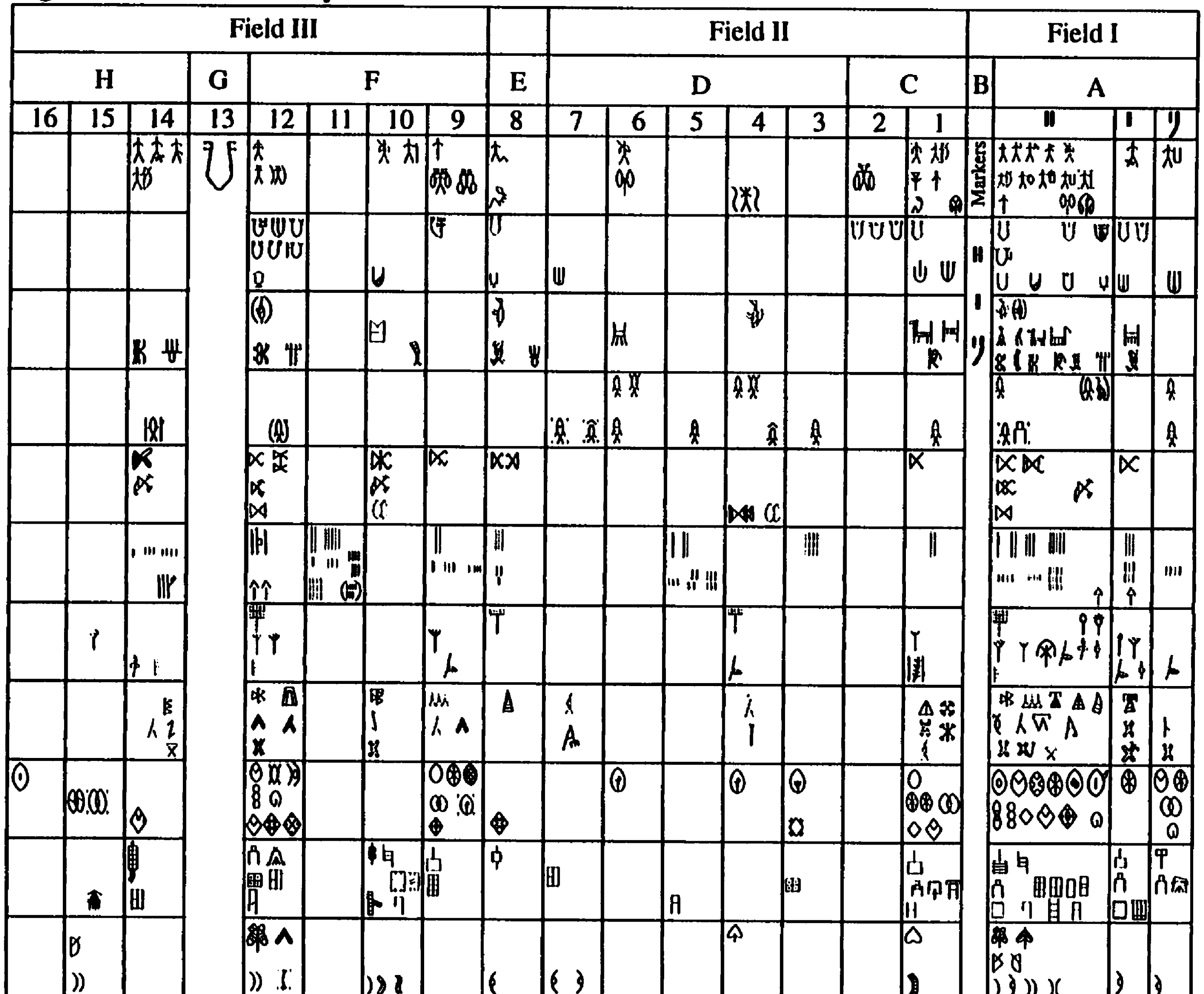


Figure 4.7 Six Most Common Fish Signs by Site.

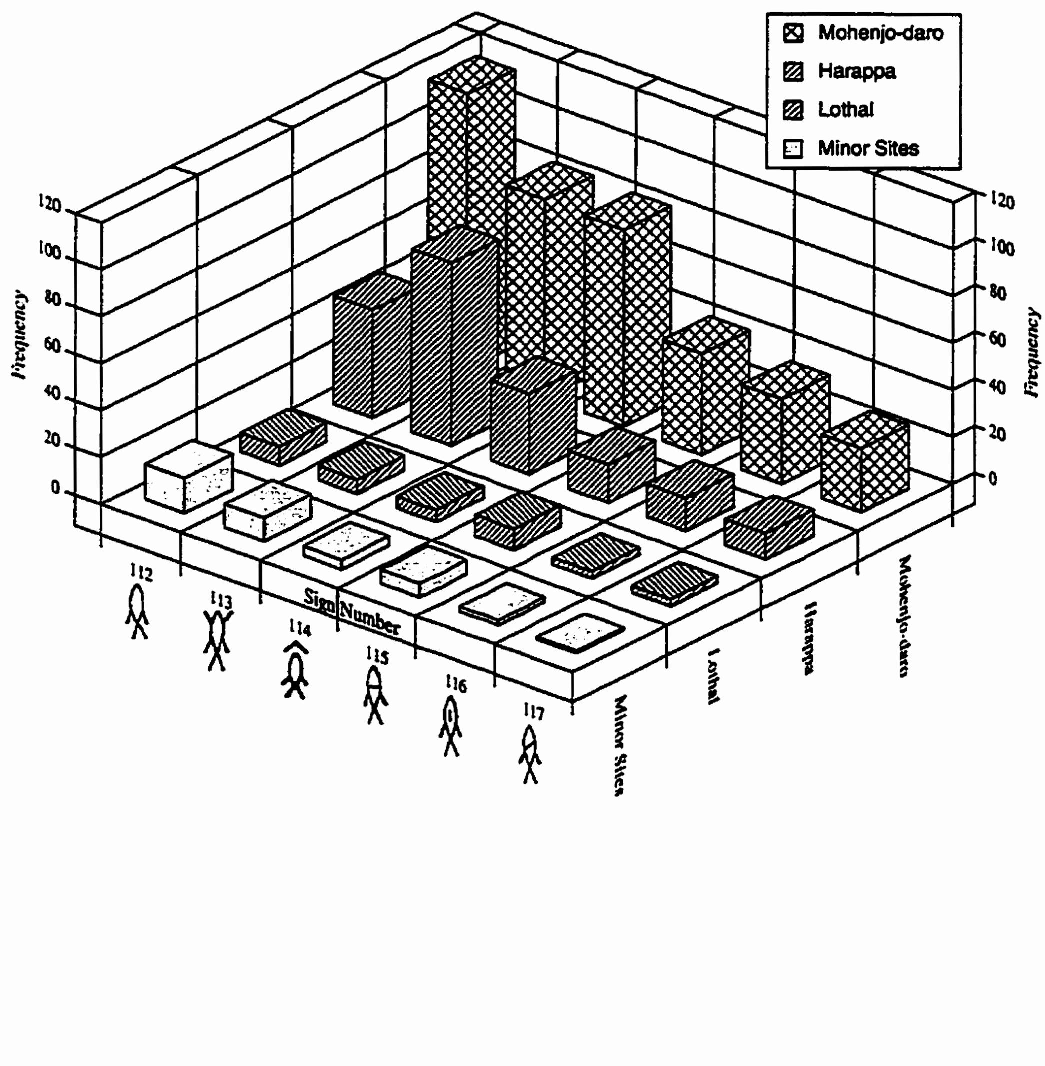
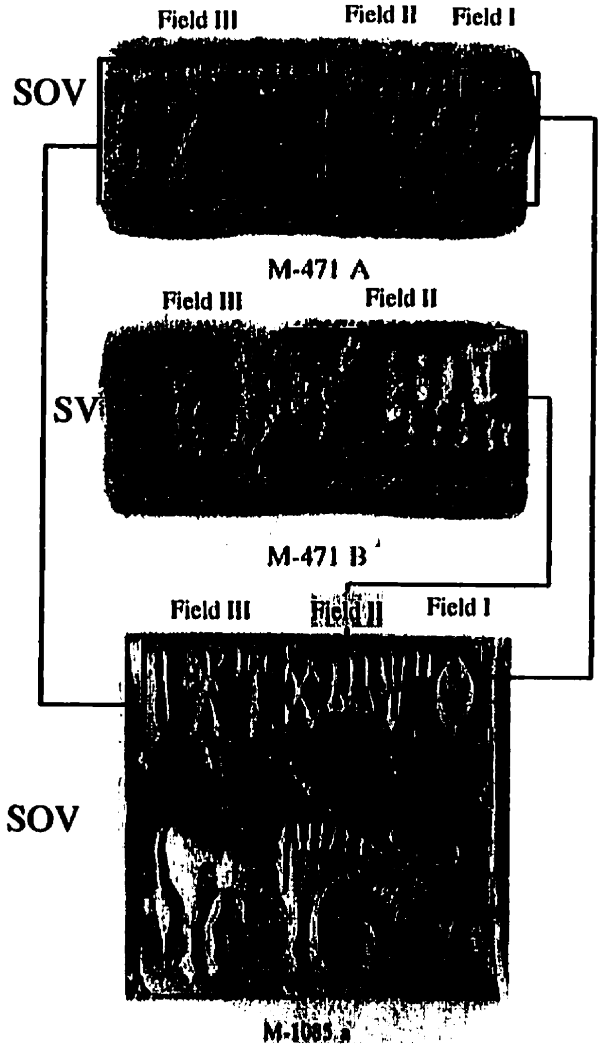
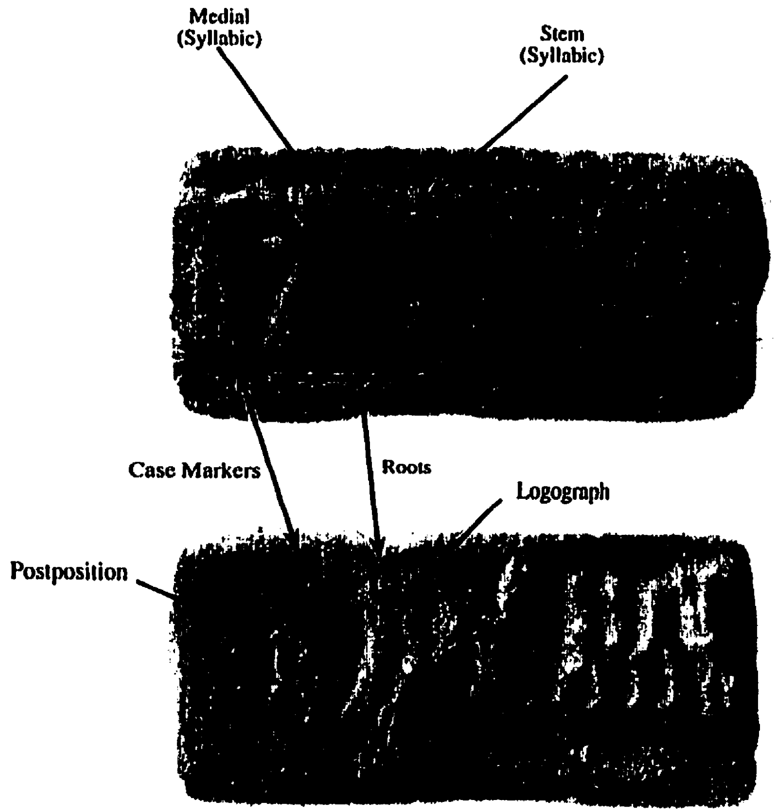


Figure 4.8 Indus Words and Phrases

a.



b.



Chapter 5

Reading Indus Signs

The purpose of this chapter is to examine the applicability of epigraphic methods in common use by epigraphers studying Maya hieroglyphics, and how these methods might be applied to the reading of Indus inscriptions. Several possible readings of Indus signs are examined in terms of the characteristics of Dravidian languages and how these languages might be expressed by a Dravidian based script. Some readings of specific Indus signs are proposed and discussed. These readings are derived through the examination of replacement sets of both iconographic elements and signs.

Methods For Analyzing Inscriptions

The agreement among researchers accepting Proto-Dravidian as the language of the Indus people does not carry over into the details of their decipherments. While most Indic epigraphers now accept the Dravidian solution, none of these Dravidian based decipherments agree in detail as to the identification of graphic or semantic values of specific Indus signs. They do not agree as to the form or construction of the root lexicon, nor can the details of the Indus language be reconstructed with any confidence. There is likewise no universally accepted list of Indus signs.

Nevertheless some general rules can be tentatively accepted and compared to the mechanics of both Dravidian languages and Indus inscriptions:

1. The syntax of the script should be subject-object-verb (SOV) (McAlpin, 1981: pp. 55-56).
2. Word construction in the script likely follows the root + case + pp/cl[1] pattern (McAlpin, 1981, p 88).
3. Modifiers should follow the noun or verb they modify, but are rare (McAlpin, 1981, pp. 55-56).

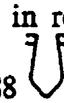
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[1] *pp/cl* is an abreviation which stands for postposition/clitic. Clitics are gramatical morphemes which follow words or phrases and describe qualities of inclusion, exclusion, uniqueness etc (McAlpin, 1981:p32). Postpositions in this paper are defined as morphemes which follow the root, but which are neither a case nor a clitic.

4. Numbers should follow nouns (McAlpin, 1981, p 73).

These few general rules are testable to some degree by comparison with positional patterns of signs within the Indus inscriptions.

This analysis is complicated by the nature of the artifacts. The vast majority of Indus inscriptions are found on intaglio seals. As argued elsewhere (Kelley and Wells, 1995) the multiple seal impressions on load tags (Joshi and Parpola: 1987, pp. 316-318) demonstrate that some individual seals contain only part of the message and must be combined to form a complete message. Conversely, artifacts such as sealings (tablets) and copper tablets contain whole messages, albeit short ones. Seals can be expected to contain information relating to the transportation and identification of shipments of trade items. Tablets give us some idea of the structure of whole messages, and they can be used for comparison to seals to help in their recombination.

Traditional methods of analyzing the Indus inscriptions have combined all inscriptions into a single set. This has lead to some irregularities in results. There is a strong possibility that different classes of artifacts address different topics and, therefore, use different signs and sign combinations. Further, there are noticeable regional differences in the construction of inscriptions between those excavated from Mohenjo-daro and those excavated from Harappa. These minor differences may be related to variations in Indus dialects, or to regional differences in the methods of using seals, or to regional differences in writing practices. These possibilities recommend a comparative rather than comprehensive approach to the inscriptions. My own research (column analysis) indicates that, among intaglio seal inscriptions, there is a good deal of regularity in relative positioning of signs within inscriptions from Mohenjo-daro containing sign 288  in the terminal or near terminal position.[2] This regularity in relative positioning of signs breaks down when it is extended to inscriptions from Harappa, or from other types of artifacts.

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[2] In some cases  (a possible case ending) is followed by pp/cl's.

Regardless of differences in detail all inscriptions follow general rules of sign placement and use.

To return to how Mayanists have approached that script: most of the progress in understanding Maya hieroglyphic writing has come through the comparison of inscriptions and their accompanying pictures, or through the comparison of parallel inscriptions containing sign replacement sets. The first approach is difficult with Indus inscriptions as depictions are rare. The second approach requires a knowledge of the value of the sign being compared. Analysis is also complicated by the possibility that replacement sets have different values, for example: '2 days' as compared to '7 days'. If the signs for two and seven are not recognized as numerical, then they may be wrongly identified as allographic variations of a single sign. This already difficult situation is further complicated by the fact that signs can be logographs, syllables, determinatives, or have some other as yet undefined function. Some signs may have multiple functions depending on their context. In some cases, for example the Maya *tun* sign, signs in a script can have several different values. In these cases meaning often depends on context. Not all scripts use all these components, nor is every component used in the same way from script to script. The lack of a widely accepted list of Indus signs prevents the complete differentiation between allographic and graphemic variations of signs, and issues of sign functions have traditionally been ignored. Consequently, decipherments of Indus inscriptions have presented readings which are untestable.

Specific Cases

There is one set of Indus inscriptions where signs and images replace each other -- namely the copper tablets from Mohenjo-daro. These copper wafers are engraved on both sides. The reverse bears an inscription, the obverse bears either an image or a sign set (usually several conflated signs).

One set of 16 copper tablets bear the inscription: . Fourteen

of these tablets have a picture of a hare browsing grass on the reverse, while two examples bear sign 338  sign, as shown in the following drawing:



This raises the possibility that this sign has the meaning of 'hare'. In Tamil there are two words for hare. Of these possibilities *ceviyan* (DED 1645)[3] is one and *muyal* (DED 4071) is the other.

Table 4.1 Terms For Hare In Dravidian Family of Languages

Language	Hare (DED 4071)	Hare(DED 1645)	Ear(DED 1645)
Tamil	muyal/mucal	ceviyan	cevi
Malayalam	muyal	ceviyan	cevi
Kota	molm		ceppi
Toda	mus		kev/kify
Kannada	mola/mala		kivi/kimi
Kodagu	mona		kevi^{n}
Tulu	muyeru/mug(g)eru mola (large hare)		kebi
Kolami	mite		kev
Naiki	mite		kev
Parji	muda		kekol
Gadba			
Ollari	munde		kekol
Salur	munde		kekkol
Gondi	malol/molol		kawi
Konda	morol		--
Kui	mradu		kriu
Kuwi			
Fitzgerald	mralu		kiriyu
Schulze	mralu		kriju
Kurukh	munya		khebda
Malto	munye		qethwu
Brahui	muru		khaf

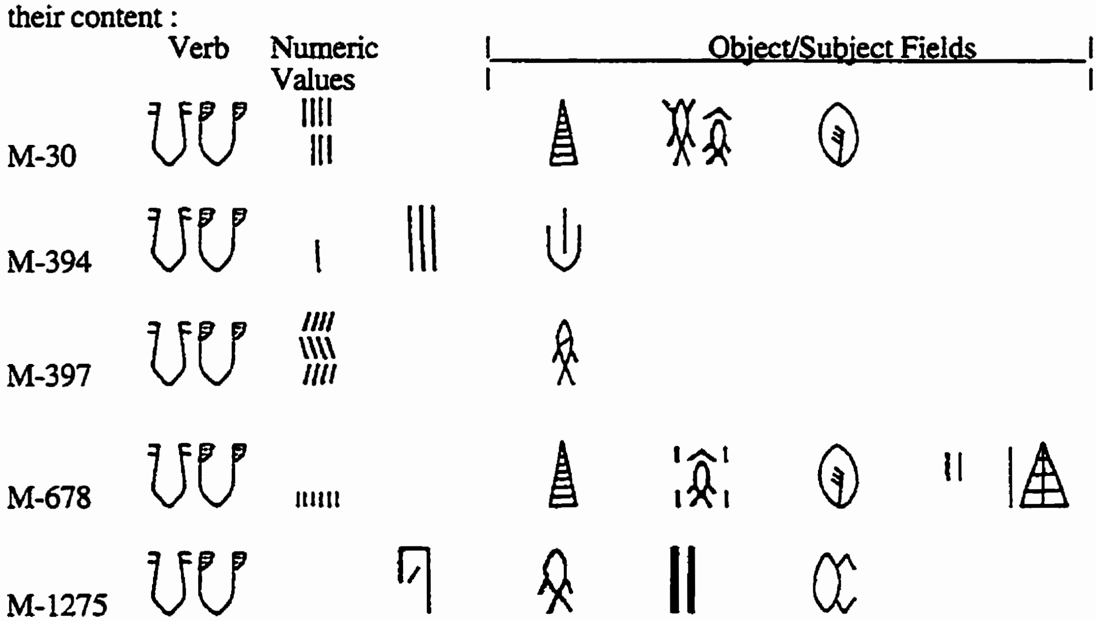
Most researchers, for reasons obvious from Table 4.1, reconstruct **muyal* as the Proto-Dravidian word for 'hare'. Yet the strong association of *cevi* to words relating to hearing and ear, makes *ceviyan* (PDr **keviyan*) worth a closer look. If it is assumed for

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[3] DED stands for Dravidian Etymological Dictionary.

now that reads **keviyan*, then the components (306) and (342) should have the values **kevi* and *-yan*. The sign can be considered a possible verbal case marker as it terminates several (13) inscriptions, while is graphically suggestive of ears. Sign 306 occurs separately in at least nine inscriptions (M-30, M-394, M-397, M-678, M-1275, H-47 & H-58), but always with the pair . That is to say that needs a case marker.

I am convinced by the summary of arguments presented by Parpola (1994: pp. 64 - 67) that the Indus script reads right to left, and follow that practice in identifying the fields of the inscriptions that follow. The following five inscriptions are very similar in terms of their content :

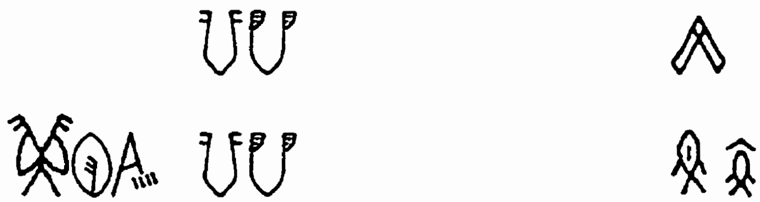


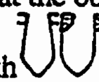
The two examples from Harappa occur in slightly different context than those from Mohenjo-daro. These variations in usage may point to differences in dialect or regional differences in seal usage.

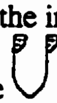
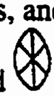
pp/cl? Verb Numeric Values | Object/Subject Field |

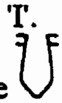
H-47

H-58



Given the suggested **keviyan* reading above, we can expect that the verb in these seven inscriptions will begin with *kevi* and end with a common verbal case marker. The only match for these expectations from the DED is #2265: *cevvai* = 'correctness, fitness, accuracy, straightness, evenness, smoothness, sound condition as of mind, body'. The inscriptions above follow the pattern predicted by Dravidian syntax in that the object/subject is separated from the verb by a numeral. In inscriptions ending with , sign 288 terminates the inscriptions, and verifies that sign 306 can be followed by a case marker.

The  (306) and  (342) signs occur independently and may have the following values:  = **kev(i)* (DED #1645), 'ear' (Ta & Ma);  = *yan* (DED #4234), first person oblique ending, and personal pronoun 'I'.

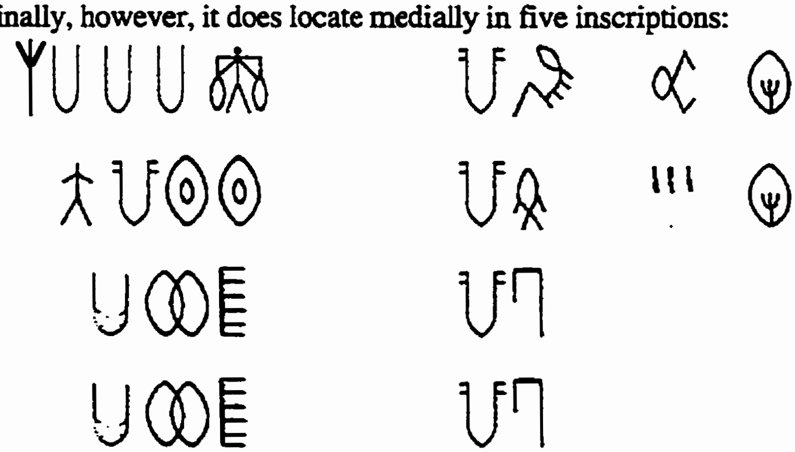
The **kevvai* reading would give  a value of **-ay* [or **-ai*] (PDr) accusative case (McAlpin, 1981:122; DED(s) #2830), first person singular appellative, a word for 'cow' (DED(s) 283) , and Pr.D 'mother' (McAlpin, 1981:122). Sign 288 usually locates terminally or semi-terminally, however, it does locate medially in five inscriptions:

M-495A

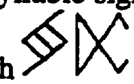
M-1429A

H-172A

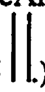
H-705A



L-122 

With the exception of L-122 these inscriptions occur on bas-relief tablets. In these cases sign 288  may be functioning as a syllabic sign [*ay* or *ai*] or as the basic Proto-Dravidian non-masculine ending **-ay/*-ai*, with  being a verb phrase in the case of L-122. Alternately, the seal inscriptions from Mohenjo-daro (M-30, M-394, M-397, M-678, M-1275) may contain only part of the message, while the tablets contain complete messages.



There is good evidence that sign 288 may read **-ay* or **-ai* and be functioning as a case ending and syllabic sign. McAlpin (1981:42) reconstructs **ir* as the Proto-Dravidian numeral two (possibly sign 195 ). The Type G (tablet) inscription found on H-182 (shown here) combines both these elements, perhaps reading **-iray* meaning 'great person'. The value of sign 345  is unknown, but both the accompanying picture of the drummer and graphic design of sign 345 suggest that a reading meaning drum or drummer is possible. The only word for drum in the Dravidian Etymological Dictionary which meets the expectations outlined above is DED 3319 *parai* (Ta.) 'drum,[4] a measure of capacities'; *para* (Ma.) 'drum, a rice measure, disk, circle'; *pare* (Ka. and Kod) 'drum (a large double headed drum beaten by Mede)'; *par* (Ko. and To.) 'drum. The root *par* 'drum' and the affixes **-iray* may read *pariray* 'great drummer'.[5]

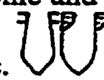
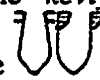
Conclusion

In the above discussion I have applied some simple epigraphic techniques to

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[4] Drum in this case is a musical instrument as all of the 22 listings in the DED as various specific words for drum and drumming.

[5] *Parai* (DED 3318) is a related word meaning 'to speak, say'.

reading Indus signs. These techniques have been used with good results by Mayanists in the decipherment of ancient Maya inscriptions. The readings resulting from the application of these techniques to Indus inscriptions support the hypothesis that the Indus people spoke and wrote a language related to Proto-Dravidian (and Proto-Elamo-Dravidian). The results of this study also confirm that the Indus script is logographic and syllabic, and that signs may have slightly different values dependent on context (i.e.  = **kev-ai;*  = **kevi-yan*). Further, the general rules of syntax and word construction outlined in Chapter 4 for Dravidian languages fit with these readings. The **keviyan* reading agrees with the image of a hare which replaces for the  sign, and the  = **kevvai* = 'correct or accurate' rplus a number eading agrees with the archaeological evidence which suggests the seal were used to control the flow of trade items. In some cases (Figure 5.2) signs can be matched to graphic elements present on seals as in the case of the rhinoceros horn. Readings based on these matches can only be speculative at this time. The rhinoceros horn (sign 412) cannot be read with certainty, but it can be identified as a logograph of an item of trade.[6]

One implication of the confirmation of Indus syntax is that items of trade, place names and/or personal names will be contained within the object/subject fields. The signs for various objects can be extracted from inscription containing numbers because numbers are terminal in nominal phrases and should be preceded by the nouns which they modify. In Chapter 4, structural analysis revealed that many of the Field II signs were logographic. These logographs are probably naming items of trade, and this is an area of future research.

The identification of these items of trade and names of Indus people and places may represent the best opportunity to expand our knowledge of the Indus Script. The high proportion of logographs in Field II makes precise decipherment of these items difficult. Generally, Field II signs are unique to this field, and exceptions are most likely syllabic signs.

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[6] *kompu* 'horn of animal, tusk' (DED1759); *koto* 'horn, tusk'.

The inventory of verbs generated through column analysis is the focus of my own ongoing research. The relationship between stems and postpositions is highly patterned further research could, in time, lead to further identifications of these elements. The ability to identify whether specific signs are logographic or phonetic elements makes their decipherment easier.

Figure 5.1 Selected Seals With Postulated *kevai* Sign Cluster.

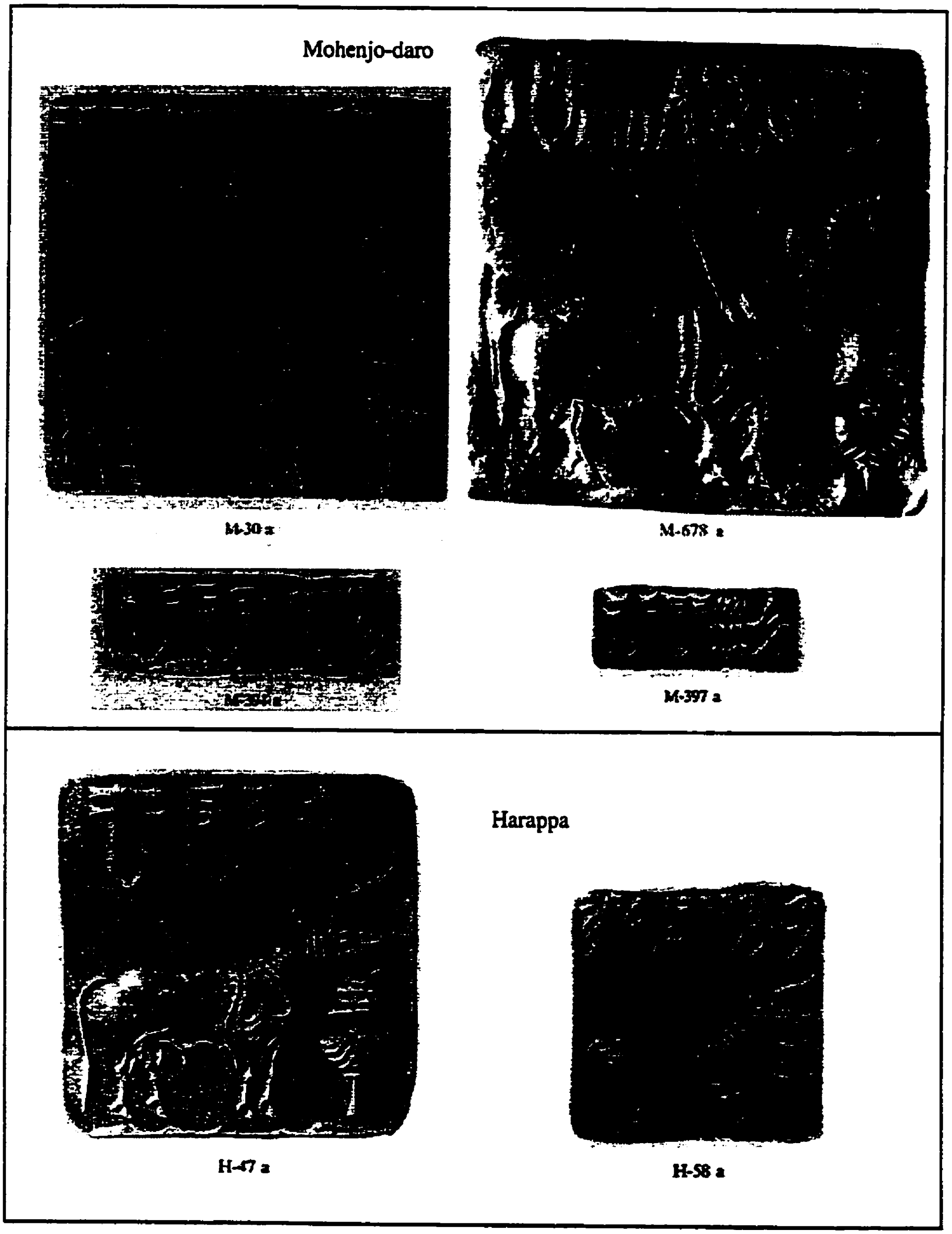


Figure 5.2 Rhinoceros Horns In Iconography and Texts.

a. Signs



a b c d

417 425 412

b. M-276



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Appendix I
Table 3.2

Table 3.2 Signs Sorted by Sign Number

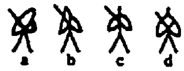


Sign # 001 Total 62 Varieties 7 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	41	15	4	2
Percent	1.00	0.70	1.11	0.38

Class: CMX
Type:

Mohenjo-daro: a) M-79, M-91, M-199, M-211, M-231, M-648, M-709, M-727, M-772, M-869, M-980, M-1034, M-1035, M-1045, M-1085, M-1108, M-1122, M-1202, M-1221; b) M-116; c) M-120, M-144, M-427 (Tag), M-595, M-699, M-739, M-850, M-1005, M-1009, M-1418 (Bas); d) M-248, M-647, M-839; Type C-> b) M-375, M-376, M-402, M-1264, M-1298; d) M-357, M-363; Copper Tablets-> Marshall: CXVIII 3
Harappa: a) H-188 (Bas), H-476, H-799 (Bas); b) H-23, H-31, H-62, H-63, H-757 (Bas), H-758 (Bas); c) H-76, H-450, H-847 (Bas); e) H-80; Type C-> b) H-641, H-684.
Lothal: a) L-38, L-211 (Tag); c) L-180 (Tag); e) L-4.
Chanhujo-daro: e) C-1; f) C-17.

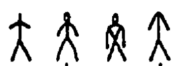


Sign # 002 Total 49 Varieties 4 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	33	8	3	5
Percent	0.81	0.37	0.83	0.96

Class: CMX
Type:

Mohenjo-daro: a) M-7, M-8, M-53, M-115, M-708, M-796, M-1203; b) M-74, M-243, M-634, M-726, M-1055, M-1098, M-1108, M-1630 (Bng); c) M-142, M-667, M-762, M-1016, M-1114, M-1127; d) M-249, M-1067, M-1165, M-1173, M-1369; Type C-> a) M-356, M-412, M-1285; b) M-1271, M-1332; c) M-1077; d) M-355
Harappa: a) H-29; b) H-153; Type C-> a) H-659; b) H-5, H-62, H-420, H-505, H-667
Lothal: a) L-237 (Pot), L-180 (Tag); Type C-> d) L-90
Chanhujo-daro: b) C-1; c) C-5, C-30;
Kalibangan: c) K-18; d) K-4



Sign # 003 Total 47 Varieties 4 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	36	7	1	3
Percent	0.88	0.32	0.28	0.57

Class: SIM
Type: Oth

Mohenjo-daro: a) M-15, M-24, M-26, M-53, M-68, M-100, M-104, M-136, M-184, M-199, M-211, M-230, M-241, M-260, M-263, M-265, M-268, M-275, M-304, M-644, M-648, M-739, M-742, M-853, M-865, M-901, M-944, M-1057, M-1165, M-1221, M-1224; b) M-669; Type C-> a) M-360, M-1288, M-1342; Copper Tablets-> MacKay: CIII, 2
Harappa: a) H-45, H-68, H-401, H-461, H-502, H-565; d) H-440
Lothal: L-4
Kalibangan: K-16
Banawali: B-1 (w feet)
Nausharo: Ns-5

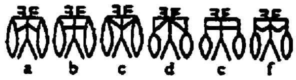


Sign # 004 Total 35 Varieties 16 Set 1.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	21	6	1	7
Percent	0.51	0.28	0.28	1.34

Class: CMP
Type: Att

Mohenjo-daro: a) M-71; b) M-783; c) M-119, M-201; d) M-1089, M-60; f) M-160, M-293, M-664; g) M-209; h) M-834; i) M-849, M-969, M-1222, M-494 (Bas), M-495 (Bas); j) M-896, M-915, M-988; k) M-215; l) M-733
Harappa: e) H-543; h) H-514; i) H-416, H-374; j) H-177 (Bas); p) H-73
Lothal: m) L-43
Kalibangan: f) K-20, K-22; o) K-49
Chanhujo-daro: a) C-9; b) C-20
Dholavira: l) Dlv-1
Allahdino: b) Ad-5



a b c d e f

Sign # **005** Total 29 Varieties 6 Set 1.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	18	7	2	2
Percent	0.44	0.32	0.56	0.38

Class: CMP
Type: Att

Mohenjo-daro: a) M-80, M-96, M-97, M-190, M-795, M-838; b) M-93, M-187, M-188, M-193, M-282, M-995;
c) M-1091; d) M-132, M-780, M-991, M-1123, M-1405 (Bas)
Harappa: a) H-516, H-545; b) H-499; d) H-212; e) H-38, H-92; f) H-81
Lothal: a) L-42; d) L-21
Kalibangan: f) K-80 (Tag)
Chanhujo-daro: b) C-21



Sign # **006** Total 21 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	18	2	1	
Percent	0.44	0.09	0.28	

Class: CMP
Type: Att

Mohenjo-Daro: M-71, M-145, M-164, M-282, M-328, M-717, M-837, M-879, M-972, M-981, M-1300, M-1315, M-1329; Type C-> M-371, M-382, M-400; Copper Tablets-> MacKay: CIII - 2, 6
Harappa: H-72, H-451
Lothal: L-21

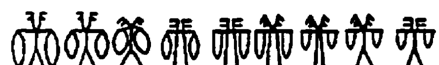


Sign # **007** Total 20 Varieties 1 Set 1.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	13	5	1	1
Percent	0.32	0.23	0.28	0.19

Class: SIM
Type: Oth

Mohenjo-daro: M-10, M-170, M-245, M-331, M-495, M-658, M-677, M-815, M-985, M-1095, M-1169, M-1272; Copper Tablets-> Marshall: CXVII 2
Harappa: H-64, H-141, H-161, H-597a, H-597c
Lothal: L-138 (Tag)
Kalibangan: K-9



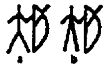
a b c d e f g h i

Sign # **008** Total 19 Varieties 9 Set 1.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	7	10	2	
Percent	0.17	0.46	0.56	

Class: CMP
Type: Att

Mohenjo-daro: a) M-102; c) M-1372 (Pot); e) M-670, M-899; g) M-379; M-1324 (Bas); Type C-> a) M-1270;
Harappa: b) H-27; Type C-> a) H-154; c) H-132, H-643; d) H-157; f) H-152, H-670; h) H-143, H-146; i) H-160
Lothal: h) L-16; Type C-> d) L-102



Sign # **009** Total 14 Varieties 2 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	5	7		2
Percent	0.12	0.32		0.38

Class: CMP
Type: Att

Mohenjo-daro: a) M-38, M-41, M-119, M-191; b) M-251
Harappa: a) H-10, H-11, H-50, H-52, H-74, H-246 (Bas): Type C-> H-130
Lohumjo-daro: a) Lh-1
Surkotada: a) Sktd-1



Sign # **010** Total 11 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	1		7
Percent	0.07	0.05		1.34

Class: CMP
Type: Dbl

Mohenjo-daro: M-798, M-1032, M-1370 (Cyl)
Harappa: H-427
Kalibangan: K-69 (Bas) to K-75 (Bas)



Sign # **011** Total 11 Varieties 2 Set 1.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	9		
Percent	0.05	0.42		

Class: CMP
Type: Att

Mohenjo-daro: M-470 (Bas), M-1419
Harappa: H-58; Bas Tablets-> H-189, H-190, H-228, H-724, H-725, H-726, H-727, H-775



a b

Sign # **012** Total 8 Varieties 2 Set 1.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	4		1
Percent	0.07	0.19		0.19

Class: SIM
Type: Oth

Mohenjo-daro: b) M-123, M-661; a) M-1141
Harappa: a) H-68; b) H-91, H-230, H-815 (Bas)
Allahdino: a) Ad-6



Sign # 013 Total 8 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	5	1	2	
Percent	0.12	0.05	0.56	

Class: CMX
Type:

Mohenjo-daro: M-71, M-425 (Tag); Type C-> M-403, M-1052; Copper Tablets-> MacKay: XCIII 1;
Harappa: Type C-> H-660
Lothal: L-1, L-12



Sign # 014 Total 7 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	6	1		
Percent	0.15	0.05		

Class: MKD
Type: Enc

Mohenjo-daro: M-197, M-478 (Bas), M-479 (Bas), M-480 (Bas), M-896, M-915
Harappa: H-103



a b c

Sign # 015 Total 7 Varieties 3 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	6		1	
Percent	0.15		0.28	

Class: CMP
Type: Cnf

Mohenjo-daro: a) M-16, M-153, M-1112, M-1639 (Bng); b) M-1274; c) M-699
Lothal: L-12



a b c

Sign # 016 Total 7 Varieties 3 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	1	3	
Percent	0.07	0.05	0.83	

Class: CMP
Type: Att

Mohenjo-daro: a) M-67, M-95, M-721
Harappa: a) H-513
Lothal: b) L-94; c) L-26, L-218 (Bas)



Sign #
017 Total 6 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4	1		1
Percent	0.10	0.05		0.19

Class CMX
Type

Mohenjo-daro: M-87, M-1110; Type C-> M-361, M-366
Harappa: Type C-> H-680
Lohumjo-daro: Lh-1



Sign #
018 Total 6 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4	1		1
Percent	0.10	0.05		0.19

Class MKD
Type Brk

Mohenjo-daro: M-7, M-184, M-1372 (Pot)
Harappa: H-45
Chanhumjo-daro: C-1



Sign #
019 Total 4 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			1
Percent	0.07			0.19

Class MKD
Type Ifx

Mohenjo-daro: M-123, M-304, M-980
Kalibangan: K-24



a b

Sign #
020 Total 4 Varieties 2 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4			
Percent	0.10			

Class CMP
Type Cnf

Mohenjo-daro: a) M-831; b) M-142, M-1160, M-1162



Sign # **021** Total 4 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4			
Percent	0.10			

Class: CMX
Type:

Mohenjo-daro: M-252 (x2), M-495 (bas), M-1092

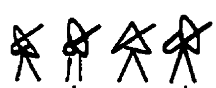


Sign # **022** Total 4 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4			
Percent	0.10			

Class: CMP
Type: Att

Mohenjp-daro: M-1425 (bas), M-478-480 (bas). May be part of the picture and not a true sign.



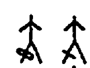
a b c d

Sign # **023** Total 4 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1		3	
Percent	0.02		0.83	

Class: CMX
Type:

Mohenjo-daro: a) M-72
Lothal: a) L-237; b) L-118; d) L-60



a b

Sign # **024** Total 3 Varieties 2 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	2		
Percent	0.02	0.09		

Class: CMX
Type:

Mohenjo-daro: a) M-386
Harappa: b) H-584, H-829 (Bas)



Sign # **025** Total 3 Varieties 1 Set 1 Class CMP Type Att

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	1		
Percent	0.05	0.05		

Mohenjo-daro: M-262, Type C-> M-383
Harappa: H-197 (Bas)



Sign # **026** Total 3 Varieties 1 Set 1 Class CMP Type Att

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			
Percent	0.07			

Mohenjo-daro: M-17, M-320, M-354



a b

Sign # **027** Total 3 Varieties 2 Set 1.5 Class CMP Type Att

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			
Percent	0.07			

Mohenjo-daro: a) M-197, M-990; b) M-813



a b c

Sign # **028** Total 3 Varieties 3 Set 1.5 Class CMP Type Att

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	1		
Percent	0.05	0.05		

Mohenjo-daro: a) M-1305; b) M-899
Harappa: c) H-57



Sign # **029** Total 3 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	1		
Percent	0.05	0.05		

Class: CMX
Type:

Mohenjo-daro: Type C-> M-380, M-1281
Harappa: H-976 (Bas)



Sign # **030** Total 2 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		1
Percent		0.05		0.19

Class: CMP
Type: Cnf

Harappa: H-76
Kalibangan: K-25



Sign # **031** Total 2 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: CMP
Type: Att

Mohenjo-daro:M-33, M-239



Sign # **032** Total 2 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: CMP
Type: Att

Mohenjo-daro: M-887
Harappa: H-94

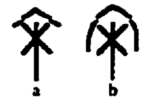


Sign # **033** Total 2 Varieties 1 Set 1.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: CMP
Type: Att

Mohenjo-daro: M-85, M-203



Sign # **034** Total 2 Varieties 2 Set 1.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: MKD
Type: Dia

Mohenjo-daro: a) Marshall->No. 320; b) M-92

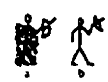


Sign # **035** Total 2 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: MKD
Type: Ifx

Mohenjo-daro: Copper Tablets-> MacKay: XCIII, 4; CIII, 4;

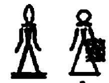


Sign # **036** Total 2 Varieties 2 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				2
Percent				0.38

Class: CMP
Type: Att

Chanhujo-daro: C-23, C-24


a b

Sign # **037** Total 2 Varieties 2 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			1
Percent	0.02			0.19

Class: CMX
Type:

Mohenjo-daro: a) M-669
Banawali: b) B-17



Sign # **038** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-1054



Sign # **039** Total 1 Varieties 1 Set 1.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-633



Sign # **040** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-234



Sign # **041** Total 1 Varieties 1 Set 1

	Mohenio-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMP
Type: Att

Harappa: H-517



Sign # **042** Total 1 Varieties 1 Set 1

	Mohenio-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMP
Type: Att

Harappa: H-36



Sign # **043** Total 1 Varieties 1 Set 1

	Mohenio-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-130



Sign # **044** Total 1 Varieties 1 Set 1

	Mohenio-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Cnf

Mohenjo-daro: M-875



Sign # **045** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Cnf

Mohenjo-daro: M-802



Sign # **046** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Cnf

Mohenjo-daro: M-991



Sign # **047** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: M-704



Sign # **048** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type: Inv

Mohenjo-daro: M-306



Sign # **049** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMP
Type: Att

Chanhujo-daro: a) C-23



Sign # **050** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-161



Sign # **051** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMP
Type: Att

Harappa: H-481



Sign # **052** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-288



Sign # **053** Total 1 Varieties 1 Set 1

	Mohenio-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-99



Sign # **054** Total 1 Varieties 1 Set 1

	Mohenio-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ced

Mohenjo-daro: M-130



Sign # **055** Total 1 Varieties 1 Set 1.5

	Mohenio-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-328



Sign # **056** Total 1 Varieties 1 Set 1.5

	Mohenio-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: M-267



Sign # **057** Total 1 Varieties 1 Set 1.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: SIM
Type: Oth

Chanhujo-daro: C-3 (Pot)



Sign # **058** Total 1 Varieties 1 Set 1.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: SIM
Type: Oth

Harappa: H-847 (Bas)



Sign # **059** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Cnf

Harappa: H-477



Sign # **060** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMP
Type: Cnf

Harappa: H-951 (Bas)



Sign # **061** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Crd

Mohenjo-daro: M-130

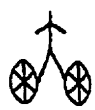


Sign # **062** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-35



Sign # **063** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	
Percent			0.28	

Class: CMP
Type: Att

Lothal: L-221 (Pot)



Sign # **064** Total 1 Varieties 1 Set 1.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Brk

Mohenjo-daro: M-331



Sign # **065** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type: Mir

Mohenjo-daro: M-1198



Sign # **066** Total 1 Varieties 1 Set 1.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-769



Sign # **067** Total 1 Varieties 1 Set 1.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-800



Sign # **068** Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-1316



Sign # 069 Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: Copper Tablets-> Marshall: CXVII 10



Sign # 070 Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: Copper Tablets-> Marshall: CXVII 10



Sign # 071 Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: MacKay No. 434 (Inc)

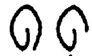


Sign # 072 Total 1 Varieties 1 Set 1

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ess

Mohnejo-daro: M-1444 (Inc), M-1445 (Inc); Type C-> M-398


a b

Sign # **073** Total 11 Varieties 2 Set 2

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	9	2		
Percent	0.22	0.09		

Class: SIM
Type: Oth

Mohenjo-daro: a) M-211, M-249, M-828; b) M-95, M-220, M-1046; Type C-> a) M-1281; Copper Tablets-> MacKay: XCIII 5, 6
Harappa: a) H-688; Type C-> b) H-162


a b c

Sign # **074** Total 3 Varieties 3 Set 1.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			
Percent	0.07			

Class: CMX
Type:

Mohenjo-daro: a) M-101; b) M-1159; c) M-675



Sign # **075** Total 3 Varieties 1 Set 1.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		1
Percent	0.02	0.05		0.19

Class: SIM
Type: Oth

Mohenjo-daro: M-1397 (Bas)
Harappa: H-175 (Bas)
Chanhumjo-daro: C-35



Sign # **076** Total 1 Varieties 1 Set 1.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMP
Type: Cnf

Harappa: H-455

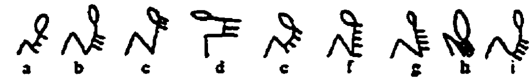


Sign # **077** Total 1 Varieties 1 Set 2

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	
Percent			0.28	

Class: MKD
Type: Att

Lothal: L-26



Sign # **078** Total 63 Varieties 9 Set 3

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	37	19	3	4
Percent	0.90	0.88	0.83	0.76

Class: CMX
Type:

Mohenjo-daro: a) M-814; b) M-189; c) M-68, M-155, M-288 e) M-22, M-34, M-230, M-289, M-629, M-801, M-848, M-943, M-1062, M-1268, M-1294, M-1418 (Bas); f) M-330; g) M-15, M-276, M-301, M-320, M-623, M-625, M-756, M-963, M-1200; h) M-736, M-1195; i) M-116; Type C-> e) M-376; g) M-372; Copper Tablets-> e) MacKay: XCIII 5, 6, 12; CIII 3; a) Marshall: CXVIII 1
Harappa: a) H-232 (Bas); b) H-351 (Inc) to H-356 (Inc); c) H-782 (Bas), H-961 (Inc), H-978 (Inc); e) H-2, H-20, H-24, H-960 (Inc); g) H-56, H-408, H-464, H-699 (Bas), H-742 (Bas);
Lothal: L-35, L-46, L-55
Kalibangan: a) K-7, K-62; b) K-44
Pirak: g) Pk-1



Sign # **079** Total 7 Varieties 1 Set 3

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4	3		
Percent	0.10	0.14		

Class: SIM
Type: Oth

Mohenjo-daro: M-181, M-623, M-1629 (Bng); Type C-> M-1267
Harappa: H-76, H-503, H-742 (Bas)



Sign # **080** Total 1 Varieties 1 Set 3

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: SIM
Type: Oth

Kalibangan: K-104 (Pot)



Sign # 081 Total 1 Varieties 1 Set 3

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-402



Sign # 082 Total 1 Varieties 1 Set 3

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMX
Type: Mir

Harappa: H-959 (Inc)

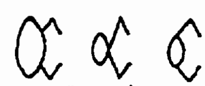


Sign # 083 Total 1 Varieties 1 Set 3

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	
Percent			0.28	

Class: SIM
Type: Mir

Lothal: L-95



Sign # 084 Total 64 Varieties 3 Set 4

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	40	18	3	3
Percent	0.98	0.84	0.83	0.57

Class: CMX
Type:

Mohenjo-daro: M-51, M-57, M-91, M-92, M-108, M-121, M-157, M-266, M-306, M-623, M-625, M-629, M-632, M-661, M-665, M-683, M-714, M-747, M-786, M-815, M-900, M-1015, M-1111, M-1323, M-1333; Bas Tablets-> M-468, M-469, M-471, M-494, M-495, 1426; Type C-> M-370, M-379, M-381, M-387, M-395, M-413; Copper Tablets-> MacKay: XCIII 10; CIII 4; Marshall: CXVII 9;
Harappa: H-26, H-40, H-44, H-270, H-386, H-423, H-446, H-457, H-464, H-515; Type C-> H-132, H-133, H-145, H-660; Bas-> H-171, H-699, H-773, H-774
Lothal: L-12, L-19, L-26
Kalibangan: K-90 (Pot)
Chanhujo-daro: C-7
Nindowari-damb: Nd-2

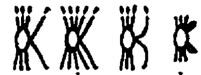


Sign # 085 Total 1 Varieties 1 Set 4

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMX
Type: Mir

Banawali: B-4



a b c d

Sign # 086 Total 9 Varieties 4 Set 5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	8		1	
Percent	0.20		0.28	

Class: CMX
Type:

Mohenjo-daro: a) M-115, M-639, M-53; b) M-49; c) M-153, M-624, M-1087; d) M-735
Lothal: L-47



a b

Sign # 087 Total 5 Varieties 2 Set 5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	2		
Percent	0.07	0.09		

Class: CMX
Type:

Mohenjo-daro: a) M-396, M-1285; b) M-39
Harappa: a) H-11; b) H-206



a b

Sign # 088 Total 3 Varieties 2 Set 5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		3		
Percent		0.14		

Class: CMX
Type:

Harappa: b) H-5; Type C-> a) H-144, H-151



Sign # **089** Total 2 Varieties 1 Set 5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: MKD
Type: Ifx

Mohenjo-daro: M-23
Harappa: H-90



Sign # **090** Total 1 Varieties 1 Set 5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: M-165



Sign # **091** Total 1 Varieties 1 Set 6

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro:M-143



Sign # **092** Total 1 Varieties 1 Set 6

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: M-890



Sign # **093** Total 1 Varieties 1 Set 6

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMX
Type:

Kalibangan: K-80 (Tag)



Sign # **094** Total 1 Varieties 1 Set 6

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-802



Sign # **095** Total 1 Varieties 1 Set 6

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-82

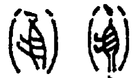


Sign # **096** Total 9 Varieties 1 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	6	1	1	1
Percent	0.15	0.05	0.28	0.19

Class: MKD
Type: Brk

Mohenjo-daro: M-31, M-153, M-266, M-920, M-1204, M-1127
Harappa: H-580
Lothal: L-147 (Tag)
Kalibangan: K-4



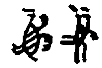
a b

Sign # 097 Total 4 Varieties 3 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4			
Percent	0.10			

Class: MKD
Type: Brk

Mohenjo-daro: a) M-214; b) M-10, M-495 (Bas)
Harappa: Type C-> (Mixed) H-142



a b

Sign # 098 Total 3 Varieties 2 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			
Percent	0.07			

Class: CMX
Type:

Mohenjo-daro: a) M-85, M-805; Type-F-> b) M-411



Sign # 099 Total 2 Varieties 1 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: SIM
Type: Oth

Mohenjo-daro: M-700; Type C-> M-366



Sign # 100 Total 2 Varieties 1 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: SIM
Type: Oth

Mohenjo-daro: M-795, M-855



Sign # 101 Total 1 Varieties 1 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-843



Sign # 102 Total 1 Varieties 1 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: SIM
Type: Oth

Harappa: H-452



Sign # 103 Total 1 Varieties 1 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-107



Sign # 104 Total 1 Varieties 1 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-929



Sign # 105 Total 1 Varieties 1 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	
Percent			0.28	

Class: SIM
Type: Oth

Lothal: L-88



Sign # 106 Total 1 Varieties 1 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-631



Sign # 107 Total 1 Varieties 1 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-274



Sign # 108 Total 1 Varieties 1 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Brk

Mohenjo-daro: M-1169



Sign # **109** Total 1 Varieties 1 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Brk

Mohenjo-daro: Type C-> M-1278

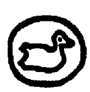


Sign # **110** Total 1 Varieties 1 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Brk

Mohenjo-daro: M-920



Sign # **111** Total 1 Varieties 1 Set 7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: Marshall-> No. 93



Sign # **112** Total 187 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	118	46	8	15
Percent	2.88	2.14	2.22	2.87

Class: CMX
Type:

Mohenjo-daro: M-23, M-37, M-36, M-38, M-46, M-49, M-52, M-53, M-61, M-65, M-91, M-94, M-108, M-117, M-124, M-130, M-133, M-136, M-140, M-147, M-151, M-154, M-163, M-172, M-174, M-211, M-218, M-221, M-234, M-237, M-240, M-260, M-279, M-304, M-308, M-309, M-319, M-323, M-623, M-627, M-631, M-632 [illegible] 634, M-636, M-648, M-650, M-651, M-655, M-661, M-707, M-[illegible]20, M-722, M-723, M-726, M-733, M-768, M-856, M-88[illegible]14, M-921, M-943, M-967, M-999, M-1020, M-1031, [illegible]52, M-1057, M-1112, M-1121, M-1148, M-1159, M-[illegible], Type C-> M-359, M-375, M-381, M-392, M-395, M-4[illegible], M-1265, M-1275, M-1294, M-1295, M-1312, M-1329, M-13[illegible] M-1350, M-1362; Bas Tablet: M-446, M-453, M-464 to M-469, M-1426, M-1427, M-1429, M-1439 to M-1442; Copper Tablets->MacKay: XCIII 1, 2, 4, 5, 6, 7, 11; Marshall: CXVIII 5

see end table

Harappa: H-4, H-9, H-12, H-18, H-20, H-68, H-82, H-85, H-92, H-103, H-320 (Inc), H-364 (Inc), H-268, H-270, H-385, H-396, H-401, H-412, H-423, H-514, H-525, H-569, H-581, H-592, H-601, H-609; Bas Tablets-> H-203, H-230, H-278 to H-284, H-747, H-748, H-761, H-767, H-789, H-807, H-815; Type C-> H-128, H-133, H-134, H-640, H-669



Sign # **113** Total 179 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	85	78	6	10
Percent	2.08	3.62	1.67	1.91

Class: CMX
Type:

Mohenjo-daro: M-5, M-7, M-24, M-29, M-30, M-38, M-39, M-41, M-42, M-46, M-49, M-54, M-79, M-81, M-84, M-93, M-129, M-133, M-141, M-144, M-166, M-186, M-199, M-208, M-236, M-240, M-280, M-285, M-289, M-297, M-319, M-629, M-631, M-638, M-644, M-651, M-657, M-671, M-705, M-706, M-722, M-758, M-759, M-793, M-801, M-808, M-814, M-819, M-827, M-833, M-858, M-860, M-865, M-888, M-941, M-951, M-958, M-960, M-962, M-970, M-979, M-1005, M-1096, M-1099, M-1136, M-1150, M-1166; Bas Tablets->M-464 to M-467, M-492, M-1415, M-1416, M-1418; Type C-> M-357, M-358, M-377, M-393, M-405, M-1265, M-1269, M-1320; Copper Tablets-> MacKay: XCIII 10; Marshall: CXVII 9;
Harappa: H-12, H-14, H-17, H-26, H-31, H-35, H-39, H-51, H-64, H-76, H-89, H-102, H-272, H-273, H-408, H-411, H-421, H-423,, H-426 H-431, H-440, H-449, H-450, H-569, H-598, H-610, H-649, H-206 (Bas), H-231 (Bas), H-237 (Bas), H-248 (Bas), H-252 (Bas) to H-276 (Bas), H-743 (Bas), H-745 (Bas), H-762 (Bas), H-808 (Bas), H-821 (Bas), H-823 (Bas), H-859 to 870 (Bas); Type C-> H-131, H-148, H-659, H-660
Lothal: L-10, L-26, L-38, L-83, L-111, L-211 (Tag), Kalibangan: K-5, K-16,



Sign # **114** Total 127 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	84	34	5	4
Percent	2.05	1.58	1.39	0.76

Class: MKD
Type: Dia

Mohenjo-daro: M-5, M-10, M-23, M-24, M-27, M-29, M-30, M-38, M-39, M-41, M-46, M-47, M-51, M-52, M-56, M-66, M-89, M-104, M-127, M-129, M-234, M-239, M-246, M-266, M-277, M-302, M-314, M-323, M-326, M-633, M-636, M-638, M-647, M-653, M-671, M-672, M-675, M-686, M-703, M-723, M-735, M-757, M-769, M-777, M-788, M-793, M-808, M-814, M-818, M-865, M-897, M-934, M-962, M-985, M-1001, M-1061, M-1064, M-1081, M-1082, M-1096, M-1113, M-1146, M-1152, M-1190, M-445 (Bas), M-486 (Bas), M-1386 (Tag), M-1415 (Bas), M-1576 (Pot); Type C-> M-355, M-359, M-360, M-377, M-396, M-399, M-405, M-407, M-1266, M-1269, M-1310, M-1343, M-1351; Copper Tablets-> MacKay: XCIII 7; Marshall: CXVIII 2
Harappa: H-12, H-21, H-25, H-39, H-40, H-42, H-44, H-46, H-58, H-76, H-389, H-391, H-426, H-432, H-478; Bas Tablets-> H-694, H-733 , H-734, H-750 to H-754, H-768, H-769, H-794, H-807; Type C-> H-129, H-141, H-148, H-149, H-639, H-657, H-667
Lothal: L-9, L-23, L-51, L-89, L-111
Chanhujo-daro: C-4, C-14
Lohumjo-daro: Lh-1

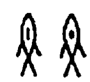


Sign # **115** Total 74 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	43	16	9	6
Percent	1.05	0.74	2.50	1.15

Class: MKD
Type: Ifx

Mohenjo-daro: M-12, M-31, M-33, M-35, M-41, M-64, M-85, M-111, M-129, M-141, M-217, M-230, M-236, M-249, M-250, M-621, M-655, M-714, M-721, M-757, M-786, M-815, M-819, M-840, M-866, M-900, M-944, M-945, M-956, M-985, M-1005, M-1015, M-1079, M-1099, M-1113, M-1156, M-1157; Type C-> M-255, M-266, M-1344; Copper Tablets-> Masrhall: CXVII 2; CXVIII 1, 2
Harappa: H-17, H-22, H-412, H-466, H-483, H-688, H-240 (Bas), H-248 (Bas), H-698 (Bas), H-762 (Bas), H-768 (Bas), H-769 (Bas), H-791 (Bas); Type C-> H-131, H-137, H-161
Lothal: L-1, L-2, L-10, L-31, L-35, L-41, L-45, L-46, L-55
Kalibangan: K-5, K-62
Chanhujo-daro: C-8, C-9
Jhukar: Jk-2
Bala-kot: Blk-3



Sign # **116** Total 55 Varieties 2 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	36	14	3	2
Percent	0.88	0.65	0.83	0.38

Class: MKD
Type: Ifx

Mohenjo-daro: M-4, M-35, M-43, M-69, M-75, M-86, M-104, M-105, M-112, M-209, M-250, M-259, M-274, M-302, M-314, M-425 (Tag), M-666, M-677, M-683, M-794, M-873, M-894, M-1109, M-1154, M-1181, M-1186, M-1190; Type C-> M-355, M-1286, M-1287, M-1303, M-1320, M-1325; Copper Tablets-> MacKay: XCIII 12; CIII 4; Marshall: CXVIII 3
Harappa: H-26, H-39, H-58, H-73, H-388, H-459, H-466, H-502, H-699 (Bas); Type C-> H-130, H-132, H-135, H-171, H-657
Lothal: L-51, L-82, L-211 (Tag)
Kalibangan: K-25
Chanhujo-daro: C-10

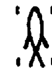


Sign # **117** Total 42 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	27	11	3	1
Percent	0.66	0.51	0.83	0.19

Class: MKD
Type: Ifx

Mohenjo-daro: M-79, M-88, M-107, M-121, M-171, M-183, M-238, M-256, M-280, M-628, M-675, M-703, M-847, M-1081, M-1150, M-1157, M-1161; Type C-> M-365, M-375, M-391, M-396, M-397, M-406, M-1266, M-1286, M-1299, M-1331
Harappa: H-21, H-484, H-489, H-501, H-601, H-609, H-874 (Bas); Type C-> H-132, H-141, H-649, H-659
Lothal: L-87, L-98, L-219 (Bas)
Desalpur: Dlp-1



Sign # **118** Total 21 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	15	1	3	2
Percent	0.37	0.05	0.83	0.38

Class: MKD
Type: Cgd

Mohenjo-daro: M-62, M-70, M-147, M-387, M-639, M-729, M-762, M-811, M-827, M-973, M-1016, M-1030, M-1118, M-1438 (Inc); Type C-> M-367
Harappa: H-561
Lothal: L-48, L-181 (Tag), L-219 (Tag)
Chanhujo-daro: C-11
Rupar: Rpr-1

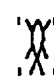


Sign # **119** Total 11 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	8	1	1	1
Percent	0.20	0.05	0.28	0.19

Class: MKD
Type: Mlt

Mohenjo-daro: M-54, M-139, M-232, M-678, M-726, M-959, M-1084; Type C-> M-354
Harappa: H-405
Lothal: L-202 (Tag)
Banawali: B-17



Sign # **120** Total 8 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	7	1		
Percent	0.17	0.05		

Class: MKD
Type: Cgd

Mohenjo-daro: M-202, M-225, M-325, M-1086, M-1091, M-1151, M-1576 (Pot)
Harappa: H-444



a b

Sign # **121** Total 7 Varieties 2 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4	3		
Percent	0.10	0.14		

Class: MKD
Type: Dia

Mohenjo-daro: a) M-928; Type C-> 1276; b) M-748, M-252
Harappa: a) H-66, H-416; b) H-390



Sign # **122** Total 7 Varieties 2 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	3		1
Percent	0.07	0.14		0.19

Class: MKD
Type: Mlt

Mohenjo-daro: M-847, M-999, M-1159
Harappa: H-2, H-89, H-794 (Bas)
Chanhumjo-daro: C-11



Sign # **123** Total 6 Varieties 1 Set 8.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4	1		1
Percent	0.10	0.05		0.19

Class: SIM
Type: Oth

Mohenjo-daro: M-159, M-281, M1638 (Bng); Type C-> M-390
Harappa: H-7
Chanhumjo-daro: C-8



Sign # **124** Total 5 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3		1	1
Percent	0.07		0.28	0.19

Class: MKD
Type: Mlt

Mohenjo-daro: M-227, M-713, M-800
Lothal: L-208 (Tag)
Kalibangan: K-33

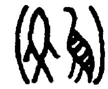


Sign # 125 Total 4 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4			
Percent	0.10			

Class: MKD
Type: Mlt

Mohenjo-daro: M-82, M-200; Type C-> M-1291; Copper Tablets-> MacKay: XCIII 7

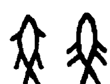


Sign # 126 Total 2 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: MKD
Type: Brk

Mohenjo-daro: M-107
Harappa: H-468



a b

Sign # 127 Total 2 Varieties 2 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			1
Percent	0.02			0.19

Class: CMX
Type:

Mohenjo-daro: b) M-1027
Kalibangan: a) K-95



Sign # 128 Total 2 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: MKD
Type: Dia

Mohenjo-daro: M-627, M-969



Sign # 129 Total 2 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: MKD
Type: Enc

Mohenjo-daro: M-877
Harappa: H-443



Sign # 130 Total 2 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1		1	
Percent	0.02		0.28	

Class: MKD
Type: Brk

Harappa: H-591
Lothal: L-82



Sign # 131 Total 2 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				2
Percent				0.38

Class: SIM
Type: Oth

Kalibangan: K-110 (Pot), K-111 (Pot)



Sign # 132 Total 1 Varieties 1 Set 8.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-725



Sign # **133** Total 1 Varieties 1 Set 8.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-331



Sign # **134** Total 1 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMX
Type:

Chanhujo-daro: C-21



Sign # **135** Total 1 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: M-61



Sign # **136** Total 1 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Dia

Mohenjo-daro: M-25



Sign # **137** Total 1 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: Type C-> M-411

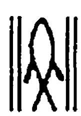


Sign # **138** Total 1 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: M-118



Sign # **139** Total 1 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Enc

Harappa: H-442



Sign # **140** Total 1 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: M-804



Sign # 141 Total 1 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMX
Type:

Kalibangan: K-96 (Pot)



Sign # 142 Total 1 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-315



Sign # 143 Total 1 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Enc

Harappa: H-442



Sign # 144 Total 1 Varieties 1 Set 3

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type: Mir

Mohenjo-daro: M-495 (Bas)



Sign # **145** Total 1 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Cpd

Mohenjo-daro: M-280



Sign # **146** Total 1 Varieties 1 Set 8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Mlt

Mohenjo-daro: M-309



Sign # **147** Total 1 Varieties 1 Set 8.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: SIM
Type: Mir

Kalibangan: K-24



With many other variations

Sign # **148** Total 44 Varieties 4 Set 9

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	28	13	1	2
Percent	0.68	0.60	0.28	0.38

Class: MKD
Type: Att

Mohenjo-daro: M-1, M-38, M-91, M-97, M-100, M-133, M-146, M-222, M-254, M-286, M-416 (But), M-425 (Tag), M-488 (Bas), M-626, M-671, M-682, M-785, M-816, M-857, M-863, M-950, M-954, M-1156, M-1200; Type C-> M-369, M-377, M-414; Copper Tablets-> Marshall: CXVII 13
Harappa: H-12, H-20, H-61, H-278-284 (CylTab), H-305 (inc), H-598, H-761 (Bas)
Lothal: L-11
Kalibangan: K-10
Nindowari-damb: Nd-2



Sign # 149 Total 5 Varieties 3 Set 9

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	1		1
Percent	0.07	0.05		0.19

Class: CMX
Type: Att

Mohenjo-daro: c) M-154, M-1202
Harappa: b) H-419; d) H-771
Nindowari-damb: a) Nd-1



Sign # 150 Total 4 Varieties 3 Set 9

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	1		
Percent	0.07	0.05		

Class: CMX
Type:

Mohenjo-daro: M-6, M-222, M-1188
Harappa: Type C-> H-129



Sign # 151 Total 2 Varieties 1 Set 9

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: MKD
Type: Mir

Mohenjo-daro: M-72
Harappa: H-299 (Inc)



Sign # 152 Total 1 Varieties 1 Set 9

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-415 (But)



Sign # **153** Total 1 Varieties 1 Set 9

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-314



Sign # **154** Total 4 Varieties 1 Set 10

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	1		1
Percent	0.05	0.05		0.19

Class: CMX
Type:

Mohenjo-daro: M-71, M-226
Harappa: H-90
Kalibangan: K-45


a b

Sign # **155** Total 2 Varieties 2 Set 10

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: CMX
Type: Mir

Mohenjo-daro: a) M-222; b) M-168



Sign # **156** Total 1 Varieties 1 Set 10

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Enc

Harappa: H-447



Sign # **157** Total 1 Varieties 1 Set 10

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMX
Type: Mir

Harappa: H-90



Sign # **158** Total 1 Varieties 1 Set 10

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: MacKay-> No. 527



Sign # **159** Total 1 Varieties 1 Set 10

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-226



Sign # **160** Total 7 Varieties 1 Set 11

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	6			1
Percent	0.15			0.19

Class: CMX
Type:

Mohenjo-daro: M-53, M-114, M-183, M-975, M-1014, M-1087
Banawali: B-17



Sign # **161** Total 4 Varieties 1 Set 11

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4			
Percent	0.10			

Class: CMX
Type:

Mohenjo-daro: M-115, M-181, M-242, M-628



Sign # **162** Total 3 Varieties 1 Set 11

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	1		
Percent	0.05	0.05		

Class: CMX
Type:

Mohenjo-daro: M-13, M-195
Harappa: H-642



Sign # **163** Total 3 Varieties 1 Set 11

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			1
Percent	0.05			0.19

Class: CMX
Type:

Mohenjo-daro: M-4, M-683
Chanhumjo-daro: C-5



Sign # **164** Total 2 Varieties 1 Set 11

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: CMP
Type: Cnf

Mohenjo-daro: M-9
Harappa: H-390



Sign # 165 Total 1 Varieties 1 Set 11

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Harappa: H-10



Sign # 166 Total 1 Varieties 1 Set 11

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-1631 (Bag)



Sign # 167 Total 1 Varieties 1 Set 11

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: Type C-> M-1316



Sign # 168 Total 1 Varieties 1 Set 11

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-1095



Sign # 169 | Total 1 | Varieties 1 | Set 11

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-1117



Sign # 170 | Total 1 | Varieties 1 | Set 11

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMX
Type: Mir

Kalibangan: K-18



Sign # 171 | Total 1 | Varieties 1 | Set 11

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Cnf

Mohenjo-daro: M-66

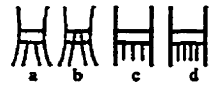


Sign # 172 | Total 1 | Varieties 1 | Set 11

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMX
Type:

Khirsara: Krs-1



Sign # **173** Total 23 Varieties 4 Set 12

	Mohenio-Daro	Harappa	Lothal	Other
Frequency	12	10		1
Percent	0.29	0.46		0.19

Class: SIM
Type: Oth

Mohenjo-daro: a) M-173, M-768, M-935, M-1060, M-1116, M-1221; c) M-1444, M-1445; Type C-> a) M-1350; b) M-1276; c) M-380; d) M-398
Harappa: a) H-22, H-46, H-248 (But), H-278 (Bas) to H- 284 (Bas)
Desalpur: b) Dlp-1



Sign # **174** Total 5 Varieties 3 Set 12.5

	Mohenio-Daro	Harappa	Lothal	Other
Frequency	3		1	1
Percent	0.07		0.28	0.19

Class: CMX
Type:

Mohenjo-daro: M-39, M-120, M-1319
Lothal: L-223 (Pot)
Khirsara: Krs-1

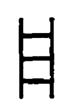


Sign # **175** Total 4 Varieties 1 Set 12

	Mohenio-Daro	Harappa	Lothal	Other
Frequency	3	1		
Percent	0.07	0.05		

Class: SIM
Type: Oth

Mohenjo-daro: M-274, M-1164, M-1204
Harappa: H-161



Sign # **176** Total 6 Varieties 1 Set 12

	Mohenio-Daro	Harappa	Lothal	Other
Frequency	2	1	1	2
Percent	0.05	0.05	0.28	0.38

Class: CMX
Type:

Mohenjo-daro:M-44, M-308
Harappa: H-682
Chanhumjo-daro: C-3, C-9



Sign # 177 Total 4 Varieties 1 Set 12.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4			
Percent	0.10			

Class: CMX
Type:

Mohenjo-daro: M-78, M-93, M-290, M-1283



Sign # 178 Total 3 Varieties 1 Set 12

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	1		
Percent	0.05	0.05		

Class: CMP
Type: Att

Mohenjo-daro: Copper Tablets-> Marshall: CXVII 5, 6
Harappa: H-22



Sign # 179 Total 3 Varieties 1 Set 12.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			1
Percent	0.05			0.19

Class: CMX
Type:

Mohenjo-daro: M-109, M-1358
Kalibangan: K-28



Sign # 180 Total 2 Varieties 1 Set 12.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: CMX
Type: Mir

Mohenjo-daro: M-702, M-976



Sign # **181** Total 1 Varieties 1 Set 12

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-36

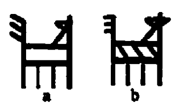


Sign # **182** Total 1 Varieties 1 Set 12

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-840



Sign # **183** Total 1 Varieties 1 Set 12.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: a) M-1341; b)M-522 (CT)

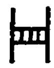


Sign # **184** Total 1 Varieties 1 Set 12.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMX
Type:

Chanhujo-daro: C-1



Sign # **185**   Total 1   Varieties 1   Set 12

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX   Type:

Mohenjo-daro: M-880

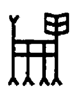


Sign # **186**   Total 1   Varieties 1   Set 12.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX   Type:

Mohenjo-daro: MacKay-> No. 527



Sign # **187**   Total 1   Varieties 1   Set 12.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX   Type:

Mohenjo-daro: Type C-> M-1336



Sign # **188**   Total 16   Varieties 2   Set 12.9

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	8	5	1	2
Percent	0.20	0.23	0.28	0.38

Class: SIM   Type: Oth

Mohenjo-daro: M-51, M-92, M-242, M-263, M-285, M-379, M-800, M-1085
Harappa: H-506, H-515, H-530; Type C-> H-162, H-648
Lothal: L-2
Kalibangan: K-89
Chanhumjo-daro: C-23

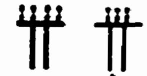


Sign # **189** Total 15 Varieties 1 Set 12.9

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	12	2		1
Percent	0.29	0.09		0.19

Class: CMP
Type: Cnf

Mohenjo-daro: M-21, M-66, M-235, M-251, M-732, M-739, M-745, M-849, M-892, M-1057, M-1116, M-1129
Harappa: H-506, H-213 (Bas)
Kalibagan: K-15



a b

Sign # **190** Total 7 Varieties 2 Set 12..8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	2	1	1
Percent	0.07	0.09	0.28	0.19

Class: SIM
Type: Oth

Mohenjo-daro: a) M-413, M-1311; Type C-> a) M-364
Harappa: a) H-8, H-642
Lothal: b) L-12
Kalibangan: a) K-108 (Pot)



Sign # **191** Total 1 Varieties 1 Set 12.9

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: MacKay-> No. 318



Sign # **192** Total 1 Varieties 1 Set 12.9

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-1228



Sign # **193** Total 481 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	278	117	42	44
Percent	6.79	5.43	11.67	8.41

Class: MKR
Type:

Mohenjo-daro: M-4, M-7, M-10, M-12, M-14, M-15, M-17, M-20, M-21, M-24, M-28, M-29, M-32, M-33, M-34, M-35, M-36, M-38, M-40, M-41, M-42, M-43, M-44, M-46, M-47, M-49, M-50, M-52, M-53, M-54, M-57, M-58, M-66, M-70, M-71, M-72, M-75, M-7[illegible] M-79, M-81, M-82, M-86, M-90, M-91, M-92, M-95, M-99, M-100 [illegible] M-103, M-107, M-109, M-110, M-114, M-115, M-116, M-[illegible], M-119, M-130, M-140, M-141, M-142, M-143, M-144, [illegible]52, M-154, M-160, M-164, M-166, M-174, M-175, M-[illegible], M-198, M-199, M-200, M-204, M-211, M-213, M-221, M[illegible]32, M-235, M-239, M-240, M-242, M-245, M-246, M-248, M-[illegible], M-253, M-258, M-259, M-260, M-267, M-278, M-279, M-280, M-285, M-289, M-308, M-309, M-311, M-316, M-314, M-315, M-318, M-325, M-327, M-329, M-330, M-437 (Bas), M-453 (Bas), M-490 (Bas), M-491 (Bas), M-595, M-623, M-628, M-629, M-636, M-639, M-644, M-650, M-651, M-655, M-653, M-656, M-658, M-665, M-675, M-677, M-678, M-683, M-692, M-699, M-701, M-703, M-706, M-708, M-712, M-713, M-714, M-717, M-720, M-721, M-722, M-723, M-724, M-726, M-727, M-728, M-732, M-735, M-739, M-756, M-762, M-776, M-781, M-783, M-785, M-788, M-792, M-793, M-794, M-795,

see end table



Sign # **194** Total 140 Varieties 1 Set 13.2

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	57	72	2	9
Percent	1.39	3.34	0.56	1.72

Class: SIM
Type: Str

Mohenjo-daro: M-4, M-10, M-44, M-50, M-54, M-64, M-86, M-117, M-118, M-122, M-135, M-139, M-236, M-276, M-303, M-319, M-425 (Tag), M-631, M-670, M-674, M-675, M-677, M-714, M-734, M-753, M-757, M-781, M-814, M-840, M-852, M-860, M-873, M-956, M-959, M-985, M-1079, M-1080, M-1155, M-1169, M-1226, M-1626 (Pot); Type C-> M-355, M-365, M-394, M-399, M-402, M-411, M-1269, M-1323, M-1328, M-1355, M-1359, M-1364; Copper Tablets-> Marshall: CXVII 5, 6, 11; CXVIII 2

Harappa: H-8, H-24, H-25, H-30, H-44, H-53, H-103, H-268, H-383, H-388, H-455, H-456, H-519, H-531, H-550, H-589, H-774 (Bas), H-776 (Bas), H-789 (Bas) to H-795 (Bas), H-798 (Bas) to H-800 (Bas), H-812 (Bas), H-818 (Bas), H-821 (Bas), H-822 (Bas), H-827 (Bas), H-834 (Bas), H-846 (Bas), H-857 (Bas), H-891 (Inc), H-904 (Inc), H-911 (Inc), H-914 (Inc), H-916 (Inc), H-[illegible]21 (Inc) to H-925 (Inc), H-927 (Inc) to H-931 (Inc), H-933 (Inc) to H-937 (Inc), H-942 (Inc), H-949 (Inc), H-950 (Inc), H-959 (Inc), H-976 (Inc), H-979 (Inc), H-986 (Inc), H-987 (Inc); Type C-> H-130, H-131, H-136, H-137, H-149, H-642, H-649, H-660

Lothal: L-10, L-146 (Tag)



Sign # **195** Total 115 Varieties 1 Set 13.2

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	80	23	4	8
Percent	1.95	1.07	1.11	1.53

Class: SIM
Type: Str

Mohenjo-daro: M-3, M-10, M-21, M-22, M-33, M-36, M-38, M-45, M-49, M-52, M-56, M-57, M-62, M-70, M-78, M-89, M-91, M-113, M-119, M-124, M-130, M-134, M-143, M-163, M-170, M-174, M-195, M-217, M-221, M-240, M-241, M-274, M-307, M-619 (Misc), M-621, M-631, M-636, M-648, M-683, M-720, M-722, M-723, M-726, M-733, M-742, M-746, M-811, M-828, M-889, M-890, M-965, M-999, M-1153, M-1159, M-1169, M-1224, M-1629 (Bng); Type C-> M-355, M-356, M-367, M-371, M-375, M-381, M-387, M-392, M-1265, M-1274, M-1277, M-1302, M-1309, M-1316, M-1332, M-1346, M-1362; Copper Tabletrs-> MacKay: XCIII 1, 5, 6, 11; CIII 6; Marshall: CXVIII 3

Harappa: H-5, H-6, H-18, H-20, H-43, H-74, H-88, H-236 (Bas), H-240 (But), H-412, H-455, H-464, H-483, H-502, H-507, H-569, H-586, H-597, H-601, H-723 (Bas), H-829 (Bas), H-904 (Inc), H-917 (Inc), H-967 (Inc)

Lothal: L-208 (Tag), L-219 (Tag); Type C-> L-114, L-118

Kalibangan: K-1, K-121 (CpO)

Chanhujo-daro: C-10, C13, C-22, C-24, C-29

Delsapur: Dlp-3

Sign # **196** Total 82 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	64	14	3	1
Percent	1.56	0.65	0.83	0.19

Class: SIM
Type: Str

Mohenjo-daro: M-1, M-21, M-23, M-55, M-65, M-84, M-111, M-157, M-165, M-172, M-205, M-234, M-252, M-261, M-268, M-416 (But), M-621, M-634, M-662, M-670, M-707, M-709, M-758, M-782, M-840, M-865, M-896, M-929, M-976, M-993, M-981, M-1020, M-1052, M-1057, M-1087, M-1103, M-1116, M-1164, M-1221, M-1228, M-1384 (Tag); Type C-> M-357, M-358, M-372, M-378, M-380, M-386, M-394, M-402, M-1262, M-1264, M-1267, M-1276, M-1286, M-1292, M-1346, M-1300, M-1308, M-1310, M-1314, M-1329, M-1334, M-1339; Copper Tablets-> MacKay: CIII 2

Harappa: H-6, H-7, H-8, H-26, H-27, H-40, H-61, H-411, H-847 (Bas); Type C-> H-143, H-155, H-642, H-648, H-682

Lothal: L-88, L-93, L-114

Kalibangan: K-7



Sign # **197** Total 75 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	50	22		3
Percent	1.22	1.02		0.57

Class SIM
Type Str

Mohenjo-daro: M-32, M-72, M-80, M-93, M-94, M-95, M-102, M-132, M-161, M-162, M-177, M-179, M-212, M-215, M-251, M-292, M-318, M-326, M-429 (Bas), M-658, M-712, M-838, M-922, M-958, M-1003, M-1108, M-1197, M-1232, M-1388 (Bas), M-1429 (Bas), M-1433 (Bas) to M-1439 (Bas); Type C-> M-358, M-366, M-374, M-380, M-1287, M-1322, M-1355, M-1364; Copper Tablets-> MacKay: XCIII 2, 5, 6; CIII 4; Marshall: CXVII 14
Harappa: H-25, H-48, H-49, H-54, H-60, H-62, H-68, H-70, H-81, H-407, H-450, H-457, H-468, H-499, H-536, H-585, H-921 (Inc) to H-923 (Inc); Type C-> H-134, H-141, H-667
Bala-kot: Blk-1
Nausharo: Ns-7
Allahdino: Ad-2

Sign # **198** Total 42 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	29	8	1	4
Percent	0.71	0.37	0.28	0.76

Class SIM
Type Str

Mohenjo-daro: M-9, M-65, M-90, M-135, M-136, M-155, M-160, M-188, M-202, M-229, M-263, M-268, M-670, M-678, M-726, M-739, M-837, M-875, M-928, M-937, M-941, M-991, M-992, M-993, M-1002, M-1160, M-1161; Type C-> M-389, M-412
Harappa: H-44, H-67, H-389, H-391, H-440, H-530, H-550; Type C-> H-129
Lothal: L-18
Kalibangan: K-1; Type C-> K-59
Chanhujo-daro: C-15
Dholavira: Dlv-1
Khirsara: Krs-1



Sign # **199** Total 38 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	20	13	1	4
Percent	0.49	0.60	0.28	0.76

Class SIM
Type Str

Mohenjo-daro: M-30, M-50, M-98, M-247, M-644, M-673, M-728, M-776, M-792, M-856, M-859, M-1138, M-1200; Type C-> M-393, M-1360; Copper Tablets-> MacKay: XCIII 1, 8, 11; Marshall: CXVIII 3; CXVII 3
Harappa: H-3, H-9, H-82, H-174 (Bas), H-268, H-272, H-383, H-432, H-453, H-489, H-523, H-592; Type C-> H-151
Lothal: L-25
Kalibangan: K-2, K-13
Khirsara: Krs-2
Allahdino: Ad-4



Sign # **200** Total 34 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	23	7	1	3
Percent	0.56	0.32	0.28	0.57

Class SIM
Type Str

Mohenjo-daro: M-75, M-96, M-103, M-234, M-278, M-315, M-331, M-478 (Bas), M-479 (Bas), M-480 (Bas), M-692, M-710, M-749, M-909, M-984, M-1063, M-1425 (Bas); Type C-> M-385, M-386, M-413, M-1262, M-1308, M-1310
Harappa: H-55, H-420, H-518, H-577, H-719 (Bas), H-778 (Bas); Type C-> H-665
Lothal: L-143 (Tag)
Kalibangan: K-50
Banawali: B-9
Surkotada: Sktd-1



Sign # **201** Total 30 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	20	6	3	1
Percent	0.49	0.28	0.83	0.19

Class: SIM
Type: Str

Mohenjo-daro: M-18, M-29, M-43, M-117, M-252, M-638, M-836, M-847, M-988, M-1053, M-1081, M-1369 (But); Type C-> M-368, M-381, M-397, M-399, M-1265, M-1266, M-1273, M-1308
Harappa: H-25, H-131, H-209 (Bas), H-270, H-386; Type C-> H-661
Lothal: L-47, L-190 (Tag), L-191 (Tag)
Kalibangan: K-30



Sign # **202** Total 21 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	15	3	2	1
Percent	0.37	0.14	0.56	0.19

Class: SIM
Type: Str

Mohenjo-daro: M-20, M-40, M-138, M-187, M-193, M-194, M-224, M-254, M-878, M-1098, M-1225, M-1375 (Pot); Type C-> M-378, M-404, M-1368
Harappa: H-512, H-589, H-993 (Pot)
Lothal: Type C-> L-88, L-102
Kalibangan: K-19



Sign # **203** Total 21 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	15	3	1	2
Percent	0.37	0.14	0.28	0.38

Class: SIM
Type: Str

Mohenjo-daro: M-17, M-53, M-112, M-136, M-158, M-178, M-416 (But), M-715, M-822, M-872, M-884, M-1224; Type C-> M-1314, M-1341, M-1365
Harappa: H-71, H-514, H-789 (Bas)
Lothal: L-27
Chanhumjo-daro: C-3
Naushara: Ns-5



Sign # **204** Total 16 Varieties 1 Set 13.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	2	12	
Percent	0.05	0.09	3.33	

Class: MKD
Type: Brk

Mohenjo-daro: M-159, M-895
Harappa: H-205 (Bas), H-890 (Inc)
Lothal: L-84, L-161 (Tag) to L-171 (Tag)



Sign # **205** Total 15 Varieties 1 Set 13.2

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	9	3	1	2
Percent	0.22	0.14	0.28	0.38

Class: SIM
Type: Str

Mohenjo-daro: M-16, M-265, M-614 (Pot), M-699, M-835, M-1112, M-1173, M-1180, M-1202
Harappa: H-219 (Bas), H-565, H-801 (Bas)
Lothal: L-12
Kalibangan: K-4, K-94 (Pot)

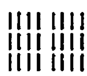


Sign # **206** Total 11 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	5	3	1	2
Percent	0.12	0.14	0.28	0.38

Class: SIM
Type: Str

Mohenjo-daro: M-39, M-90, M-116, M-266; Type C-> M-400
Harappa: H-469, H-924 (Inc); Type C-> H-154
Lothal: L-22
Kalibangan: Type C-> K-59
Desalpur: Dlp-1



Sign # **207** Total 9 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1	1	7
Percent		0.05	0.28	1.34

Class: SIM
Type: Str

Harappa: H-14 Lothal: L-115
Kalibangan: K-69 (Bas) to K-75 (Bas)



Sign # **208** Total 6 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	3		
Percent	0.07	0.14		

Class: SIM
Type: Str

Mohenjo-daro: M-83, M-172, M-283
Harappa: H-10, H-817 (Bas), H-818 (Bas)



Sign #
209 Total 4 Varieties 1 Set 13.2

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1		3	
Percent	0.02		0.83	

Class: SIM
Type: Str

Mohenjo-daro: M-1206
Lothal: L-16, L-20, L-36



Sign #
210 Total 4 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	1		1
Percent	0.05	0.05		0.19

Class: SIM
Type: Str

Mohenjo-daro: M-861; Type C-> M-362
Harappa: Type C-> H-666
Banawali: B-10



Sign #
211 Total 4 Varieties 2 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1		1	2
Percent	0.02		0.28	0.38

Class: SIM
Type: Str

Mohenjo-daro: M-331
Lothal: Type C-> L-97
Kalibangan: Type C-> K-59
Chanhumjo-daro: C-30



Sign #
212 Total 2 Varieties 1 Set 13.2

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: SIM
Type: Str

Mohenjo-daro: M-20
Harappa: Type C-> H-646



Sign # **213** Total 1 Varieties 1 Set 13.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Enc

Mohenjo-daro: M-1151



Sign # **214** Total 1 Varieties 1 Set 13.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Brk

Harappa: H-156



Sign # **215** Total 1 Varieties 1 Set 13.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: MKD
Type: Brk

Chandigarh: Ch-2



Sign # **216** Total 1 Varieties 1 Set 13.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Brk

Harappa: H-57



Sign # **217** Total 1 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Str

Mohenjo-daro: M-678



Sign # **218** Total 1 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Str

Mohenjo-daro: M-260



Sign # **219** Total 1 Varieties 1 Set 13

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: SIM
Type: Str

Harappa: H-23



Sign # **220** Total 1 Varieties 1 Set 13.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: MKD
Type: Dia

Kalibangan: K-29



Sign # **221** Total 1 Varieties 1 Set 13.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: Type C-> M-409

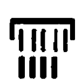


Sign # **222** Total 1 Varieties 1 Set 13.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-898



Sign # **223** Total 1 Varieties 1 Set 13.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Dia

Harappa: H-4



Sign # **224** Total 1 Varieties 1 Set 13.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Cgd

Mohenjo-daro: M-966



Sign # 225 Total 1 Varieties 1 Set 13.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Dia

Harappa: H-413



Sign # 226 Total 1 Varieties 1 Set 13.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Cpd

Mohenjo-daro: M-137



Sign # 227 Total 1 Varieties 1 Set 13.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Str

Mohenjo-daro: Marshall-> No. 273

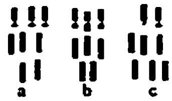


Sign # 228 Total 1 Varieties 1 Set 13.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	
Percent			0.28	

Class: MKD
Type: Att

Lothal: L-87



Sign # 229 Total 2 Varieties 2 Set 13.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: SIM
Type: Str

Mohenjo-daro: b) M-1078
Harappa: a) H-65; c) H-967 (Inc), H-322 (Inc)

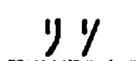


Sign # 230 Total 1 Varieties 1 Set 13.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: SIM
Type: Str

Nindowari-damb: Nd-1



Sign # 231 Total 120 Varieties 4 Set 14

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	77	22	10	11
Percent	1.88	1.02	2.78	2.10

Class: MKR
Type:

Mohenjo-daro: M-5, M-23, M-26, M-31, M-48, M-56, M-59, M-63, M-64, M-67, M-68, M-69, M-80, M-105, M-113, M-126, M-146, M-149, M-158, M-163, M-171, M-183, M-202, M-247, M-256, M-257, M-292, M-300, M-303, M-307, M-317, M-322, M-501 (Inc), M-626, M-647, M-671, M-682, M-709, M-742, M-750, M-754, M-755, M-769, M-777, M-808, M-820, M-856, M-870, M-873, M-875, M-877, M-921, M-931, M-944, M-964, M-966, M-971, M-974, M-1054, M-1078, M-1104, M-1114, M-1165, M-1181, M-1190, M-1444 (Bas); Type C-> M-363, M-365, M-369, M-387, M-390, M-396, M-1280, M-1281, M-1360, M-1369; Copper Tablets-> Marshall: CXVII 14
Harappa: H-14, H-17, H-20, H-39, H-56, H-61, H-89, H-91, H-360 (Inc), H-386, H-391, H-421, H-423, H-483, H-510, H-579, H-580; Type C-> H-133, H-142, H-151, H-646, H-665
Lothal: L-2, L-21, L-26, L-28, L-36, L-190 (Tag), L-219 (Tag); Type C-> L-87, L-90, L-122
Kalibangan: K-4, K-16. Chanhujo-daro: C-11, C-12, C-13, C-16. Banawali: B-21. Khirsara: Krs-1. Rakhigarhi: Rgr-1. Nausharo: Ns-6. Nindowari-damb: Nd-1



Sign # 232 Total 31 Varieties 1 Set 14

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	22	8		1
Percent	0.54	0.37		0.19

Class: SIM
Type: Oth

Mohenjo-daro: M-10, M-164, M-170, M-171, M-201, M-226, M-261, M-265, M-309, M-322; Type C-> M-408, M-708, M-717, M-783, M-837, M-845, M-879, M-972, M-1097, M-1135; Copper Tablets-> MacKay: XCIII 10, 14
Harappa: H-21, H-69, H-448, H-451, H-471; Type C-> H-129, H-149, H-657
Banawali: B-8



Sign # 233 Total 10 Varieties 1 Set 14

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	10			
Percent	0.24			

Class: SIM
Type: Oth

Mohenjo-daro: M-6, M-46, M-108, M-140, M-151, M-288, M-856, M-881, M-1082, M-1131



a b

Sign # 234 Total 9 Varieties 2 Set 14

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	5	2	2	
Percent	0.12	0.09	0.56	

Class: SIM
Type: Oth

Mohenjo-daro: a) M-403; Type C-> b) M-1325, M-1337; Copper Tablets->
Marshall: CXVIII, 9; MacKay: XCIII, 3
Harappa: b) H-4; a) H-150
Lothal: a) L-4; Type C-> L-88



Sign # 235 Total 4 Varieties 1 Set 14

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			1
Percent	0.07			0.19

Class: SIM
Type: Oth

Mohenjo-daro: M-789, M-877, M-881
Nindowari-damb: Nd-1



Sign # 236 Total 1 Varieties 1 Set 14

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Mir

Mohenjo-daro: M-664



Sign # **237** Total 23 Varieties 1 Set 15

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	8	8	1	6
Percent	0.20	0.37	0.28	1.15

Class: SIM
Type: Oth

Mohenjo-daro: M-114, M-140, M-149, M-627, M-709, M-746, M-888, M-967
Harappa: H-2, H-7, H-90, H-411, H-757 (Bas), H-758 (Bas), H-761
Lothal: L-45
Kalibangan: K-28, K-40
Chanhumjo-daro: C-22
Allahdino: Ad-8
Desalpur: Dlp-2



Sign # **238** Total 3 Varieties 1 Set 15

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		2	1	
Percent		0.09	0.28	

Class: MKD
Type: Ifx

Harappa: H-137, H-420
Lothal: L-122



Sign # **239** Total 3 Varieties 1 Set 15

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		1
Percent	0.02	0.05		0.19

Class: SIM
Type: Mir

Mohenjo-daro: M-632
Harappa: H-101
Kalibangan: K-45



Sign # **240** Total 1 Varieties 1 Set 15

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: Type C-> M-370

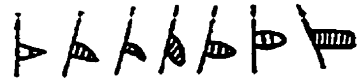


Sign # **241** Total 157 Varieties 1 Set 16

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	81	67	5	4
Percent	1.98	3.11	1.39	0.76

Class: SIM
Type: Oth

Mohenjo-daro: M-23, M-37, M-65, M-64, M-85, M-86, M-117, M-122, M-135, M-147, M-163, M-183, M-185, M-181, M-208, M-234, M-236, M-240, M-259, M-276, M-279, M-303, M-302, M-308, M-314, M-323, M-425 (Tag), M-486 (Bas), M-809, M-817, M-819, M-860, M-873, M-888, M-894, M-914, M-931, M-936, M-956, M-959, M-960, M-962, M-985, M-1031, M-1044, M-1075, M-1095, M-1109, M-1116, M-1141, M-1148, M-1150, M-1154, M-1161, M-1206, M-1226, M-670, M-686, M-732, M-753, M-757, M-759, M-769, M-777, M-781; Type C-> M-355, M-358, M-395, M-403, M-1263, M-1269, M-1272, M-1284, M-1311, M-1359, M-1396, M-631, M-650; Copper Tablets-> MacKay: XCIII 1, 11; Marshall: CXVIII 3
Harappa: H-17, H-44, H-53, H-64, H-85, H-86, H-91, H-103, H-230 (Bas), H-231 (Bas), H-243 (Bas), H-252 to H-276, H-364, H-388, H-423, H-455, H-456, H-501, H-503, H-531, H-550, H-786, H-789, H-815, H-862 to 870, H-874, H-938, H-939, H-940, H-941, H-942; Type C-> H-649, H-660, H-688, H-148
Lothal: L-10, L-39, L-92, L-98, L-138 (Tag)
Kalibangan: K-5, K-25, K32


With variations

Sign # **242** Total 43 Varieties 7 Set 17

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	26	10	1	6
Percent	0.64	0.46	0.28	1.15

Class: SIM
Type: Oth

Mohenjo-daro: M-1, M-12, M-13, M-36, M-48, M-84, M-99, M-123, M-210, M-226, M-235, M-282, M-309, M-311, M-669, M-700, M-734, M-784, M-796, M-824, M-836, M-894, M-944, M-976, M-992, M-1141
Harappa: H-40, H-54, H-90, H-96, H-139, H-155, H-694 (Bas), H-927 (Bas) to H-929 (Bas)
Lothal: L-29
Kalibangan: K-6
Chanhujo-daro: C-1
Banawali: B-1
Bala-kot: Blk-4
Allahdino: Ad-2
Unknown: ?-3



Sign # **243** Total 6 Varieties 1 Set 16

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	5		1	
Percent	0.12		0.28	

Class: MKD
Type: Dia

Mohenjo-daro: M-264, M-327, M-650, M-1263; Type C-> M-388
Lothal: L-98



Sign # **244** Total 4 Varieties 1 Set 16

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4			
Percent	0.10			

Class: SIM
Type: Oth

Mohenjo-daro: M-68, M-1081, M-253, M-1120



Sign # **245** Total 3 Varieties 1 Set 16

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	1		
Percent	0.05	0.05		

Class: CMX
Type:

Mohenjo-daro: M-3, M-192
Harappa: H-90



Sign # **246** Total 1 Varieties 1 Set 16

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: SIM
Type: Oth

Naru-waro-dharo: Nwd-1



Sign # **247** Total 8 Varieties 1 Set 17

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	7		1	
Percent	0.17		0.28	

Class: SIM
Type: Oth

Mohenjo-daro: M-28, M-34, M-66, M-315, M-626, M-663, M-1089
Lothal: L-79



Sign # **248** Total 5 Varieties 1 Set 17

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	5			
Percent	0.12			

Class: MKD
Type: Ifx

Mohenjo-daro: M-1, M-12, M-663, M-981, M-1350

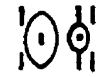


Sign # **249** Total 2 Varieties 1 Set 17

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: SIM
Type: Oth

Mohenjo-daro: M-43, M-1002



Sign # **250** Total 1 Varieties 1 Set 17

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Cgd

Mohenjo-daro: M-1313



Sign # **251** Total 1 Varieties 1 Set 17

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-34



Sign # **252** Total 1 Varieties 1 Set 17

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: MKD
Type: Enc

Chanhujo-daro: C-32 (But)



a b c d e

Sign # **253** Total 19 Varieties 5 Set 18

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	11	5	1	2
Percent	0.27	0.23	0.28	0.38

Class: MKD
Type: Att

Mohenjo-daro: a) M-133, M-212, M-1325; b) M-1128; c) M-173, M-675, M-793, M-1055; Type C-> c) M-370; d) M-359, M-1270
Harappa: H-26, H-137, H-420; Type C-> H-643; Copper Tablets-> a)
Marshall: CXVII 3
Lothal: L-143 (Tag)
Chanhumjo-daro: C-23
Bala-kot: Blk-3



Sign # **254** Total 11 Varieties 4 Set 18

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	7		1
Percent	0.07	0.32		0.19

Class: CMX
Type:

Mohenjo-daro: M-258, M-889; Type C-> M-371
Harappa: H-5, H-140, H-285 (Inc), H-289 (Inc), H-290 (Inc), H-461, H-790 (Bas)
Chanhumjo-daro: C-29



Sign # **255** Total 4 Varieties 1 Set 18

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			1
Percent	0.07			0.19

Class: CMX
Type:

Mohenjo-daro: M-33, M-772, M-817
Dholavira: Dlv-1



Sign # **256** Total 3 Varieties 1 Set 18

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	1		
Percent	0.05	0.05		

Class: SIM
Type: Oth

Mohenjo-daro: M-331; Type C->M-407
Harappa: H-42



Sign # 257 | Total 1 | Varieties 1 | Set 18

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX

Type:

Mohenjo-daro: M-112



Sign # 258 | Total 1 | Varieties 1 | Set 18

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMX

Type:

Kalibangan: K-67



Sign # 259 | Total 1 | Varieties 1 | Set 18

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX

Type:

Mohenjo-daro: Type C-> M-359



Sign # 260 | Total 1 | Varieties 1 | Set 18

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX

Type:

Mohenjo-daro: Type C-> M-389



Sign # **261** Total 1 Varieties 1 Set 18

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-213



Sign # **262** Total 116 Varieties 2 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	73	23	7	13
Percent	1.78	1.07	1.94	2.49

Class: SIM
Type: Oth

Mohenjo-daro: M-12, M-17, M-32, M-40, M-48, M-66, M-70, M-71, M-77, M-83, M-94, M-95, M-101, M-103, M-119, M-131, M-158, M-166, M-177, M-178, M-179, M-203, M-232, M-247, M-251, M-254, M-283, M-292, M-300, M-315, M-316, M-318, M-320, M-322, M-326, M-436 (Bas), M-437 (Bas), M-708, M-710, M-712, M-719, M-724, M-735, M-784, M-803, M-813, M-822, M-824, M-834, M-851, M-855, M-872, M-878, M-882, M-909, M-918, M-933, M-965, M-968, M-984, M-987, M-998, M-1017, M-1022, M-1089, M-1098, M-1123, M-1170, M-1224, M-1592 (Pot); Type C-> M-411, M-1343, M-1350
Harappa: H-39, H-54, H-55, H-70, H-71, H-75, H-180 (Bas), H-335 (Inc), H-337 (Inc), H-407, H-449, H-454, H-466, H-467, H-510, H-511, H-533, H-585, H-597, H-694 (Bas), H-695 (Bas), H-733 (Bas), H-734 (Bas)
Lothal: L-20, L-27, L-29, L-43, L-48, L-139 (Tag), L-198 (Tag)
Kalibangan: K-50, K-78 (Bas). Chanhujo-daro: C-2, C-12, C-22, C-24, C-32 (But), C-40 (CpO). Surkotada: Sktd-2. Allahdino: Ad-1, Ad-2. Nausharo:Ns-7. Bala-kot: Blk-2



Sign # **263** Total 71 Varieties 1 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	14	56	1	
Percent	0.34	2.60	0.28	

Class: SIM
Type: Oth

Mohenjo-daro: M-34, M-35, M-172, M-224, M-472 (Bas), M-672, M-673, M-1641 (Bng); Type C-> M-359, M-404, M-1304, M-1306, M-1323, M-1339
Harappa: H-8, H-21, H-22, H-23, H-43, H-207 (Bas), H-252 (Bas) to H-276 (Bas), H-389, H-479, H-518, H-663, H-750 (Bas) to H- 755 (Bas), H-859 (Bas) to H- 870 (Bas); Type C-> H-134, H-641, H-654
Lothal: L-88



With many varieties

Sign # **264** Total 70 Varieties 3 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	54	10	3	3
Percent	1.32	0.46	0.83	0.57

Class: SIM
Type: Oth

Mohenjo-daro: M-37, M-154, M-163, M-199, M-231, M-248, M-279, M-323, M-427 (Tag), M-450 (Bas), M-469 (Bas), M-468 (Bas), M-471 (Bas), M-495 (Bas), M-623, M-632, M-634, M-639, M-650, M-661, M-699, M-707, M-727, M-729, M-760, M-768, M-772, M-839, M-850, M-869, M-914, M-943, M-980, M-1009, M-1027, M-1030, M-1031, M-1045, M-1085, M-1122, M-1202, M-1418 (Bas), M-1426 (Bas); Type C-> M-363, M-365, M-369, M-395, M-406 M-412, M-413, M-1295, M-1350; Copper Tablets-> MacKay: XCIII 4; Marshall: CXVIII 5
Harappa: H-31, H-103, H-203 (Bas), H-219 (Bas), H-386, H-396, H-592, H-767 (Bas), H-786 (Bas), H-800 (Bas)
Lothal: L-18, L-145 (Tag); Type C-> L-98
Kalibangan: K-11
Pabumath: Pbm-1
Rupar: Rpr-1



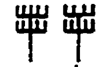
a b

Sign # **265** Total 48 Varieties 3 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	35	11	2	
Percent	0.85	0.51	0.56	

Class SIM
Type Oth

Mohenjo-daro: a) M-981; Type C-> M-1262, M-1301, M-1310, M-1344; b) M-7, M-171, M-403, M-408, M-1063; Type C-> M-354, M-368, M-378, M-385, M-1295, M-1296, M-1308, M-1314, M-1325, M-1330, M-1337; Copper Tablets-> XCIII 1, 2, 3, 4, 10, 11, 14; Marshall: CXVIII 2, 3, 5; CXVII 5, 6, 9, 14
Harappa: a) Type C-> H-132; b) H-151, H-420, H-689, H-719 (Bas); Type C-> H-141, H-657, H-659, H-665, H-129, H-130
Lothal: a) L-47, L-90



a b

Sign # **266** Total 15 Varieties 2 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	10	3	1	1
Percent	0.24	0.14	0.28	0.19

Class CMP
Type Dbl

Mohenjo-daro: M-28, M-91, M-114, M-182, M-938, M-971, M-1139, M-1222; Type C-> M-1267, M-1284
Harappa: H-475, H-562, H-770
Lothal: L-5
Pabumath: Pbm-1

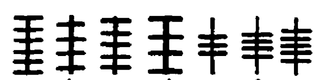


Sign # **267** Total 8 Varieties 1 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			7
Percent	0.02			1.34

Class CMP
Type Dbl

Mohenjo-daro: M-1101
Kalibangan: K-69 (Bas) to K-75 (Bas)



a b c d e f g

Sign # **268** Total 10 Varieties 6 Set 19.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	5		2
Percent	0.07	0.23		0.38

Class SIM
Type Oth

Mohenjo-daro: a) M-108; b) M-212; c) M-920
Harappa: a) H-892 (Inc), H-893 (Inc); d) H-356 (Tri); f) H-890 (Inc); g) H-205 (Bas)
Bala-Kot: e) Blk-1
Khirsara: f) Krs-1



Sign # **269** Total 3 Varieties 1 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	1		
Percent	0.05	0.05		

Class: SIM
Type: Mir

Mohenjo-daro: M-170, M-848
Harappa: H-50



Sign # **270** Total 3 Varieties 1 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	2
Percent			0.28	0.38

Class: SIM
Type: Oth

Lothal: L-45
Kalibangan: K-28
Baniwali: B-12



Sign # **271** Total 3 Varieties 1 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			2
Percent	0.02			0.38

Class: SIM
Type: Oth

Mohenjo-daro: M-734
Baniwali: B-9
Surkotada: Sktd-1



Sign # **272** Total 1 Varieties 1 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: SIM
Type: Oth

Harappa: H-66



Sign # **273** Total 1 Varieties 1 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Enc

Mohenjo-daro: M-863

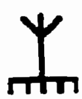


Sign # **274** Total 1 Varieties 1 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-278



Sign # **275** Total 1 Varieties 1 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMP
Type: Att

Desalpur: Dlp-3 (Tag)



Sign # **276** Total 1 Varieties 1 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Dia

Mohenjo-daro: M-1014



Sign # **277** Total 1 Varieties 1 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: SIM
Type: Oth

Lohumjo-daro: Lh-1



Sign # **278** Total 1 Varieties 1 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Mir

Mohenjo-daro: M-749



Sign # **279** Total 1 Varieties 1 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	
Percent			0.28	

Class: SIM
Type: Mir

Lothal: L-28



Sign # **280** Total 1 Varieties 1 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	
Percent			0.28	

Class: SIM
Type: Oth

Lothal: L-36

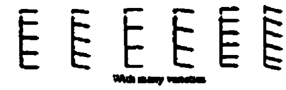


Sign # **281** Total 1 Varieties 1 Set 19

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMX
Type:

Desalpur: Dlp-2



Sign # **282** Total 143 Varieties 6 Set 20.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	40	97		6
Percent	0.98	4.50		1.15

Class: SIM
Type: Oth

Mohenjo-daro: M-123, M-73, M-145, M-214, M-202, M-218, M-231, M-263, M-290, M-704, M-710, M-732, M-748, M-770, M-830, M-836, M-874, M-879, M-916, M-947, M-961, M-1075, M-1133, M-1135, M-1224; Bas Tablets-> M-468, M-469, M-470, M-472, M-478 to M-480, M-482, M-488, M-1425; Type C-> M-356, M-1278, M-1305, M-1311, M-1332
Harappa: H-75, H- 451, H-471, H-530, H-584; Bas Tablets-> H-172, H-174, H-183, H-184, H-187 to H-190, H-203, H-204, H-207, H-211, H-213, H-214, H-215, H-226 to H-229, H-232, H-233, H-243, H-245 to H-248, H-251, H-286, H-296 to H-303, H-698, H-705, H-722, H-740, H-742, H-747 to H-755, H-761, H-763, H-767, H-775, H-789, H-790, H-792, H-793, H-794, H-802, H-813, H-816, H-817, H-841, H-842, H-845, H-849, H-874; Incised Seals-> H-313 to H-318, H-879 to H-881, H-893 to 895, H-912, H-916, H-917, H-943 to H-947, H-959, H-967, H-976, H-978; Type C-> H-160
Kalibangan: K-15, K-52, K-63
Chanhujo-daro: C-15
Nindowari-damb: Nd-2



Sign # **283** Total 4 Varieties 2 Set 20.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4			
Percent	0.10			

Class: CMP
Type: Dbl

Mohenjo-daro: M-311, M-967, M-1224; Type C-> M-373



Sign # **284** Total 2 Varieties 1 Set 20.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: SIM
Type: Oth

Mohenjo-daro: M-1203
Harappa: H-271



Sign # 285

Total 1 — Varieties 1 — Set 20.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP — Type: Mlt

Mohenjo-daro: M-1170 (A series of loads on a barge?).



Sign # 286

Total 1 — Varieties 1 — Set 20.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP — Type: Att

Mohenjo-daro: M-752



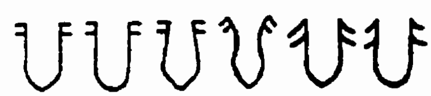
Sign # 287

Total 1 — Varieties 1 — Set 20.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: SIM — Type: Mir

Kalibangan: K-77



Sign # 288

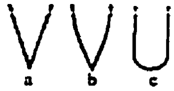
Total 855 — Varieties 6 — Set 21

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	472	291	34	58
Percent	11.53	13.51	9.44	11.09

Class: CMX — Type:

Mohenjo-daro: M-7, M-12, M-14, M-15, M-18, M-21, M-22, M-23, M-24, M-26, M-28, M-29, M-30, M-31, M-33, M-34, M-35, M-36, M-38, M-41, M-43, M-44, M-46, M-47, M-50, M-51, M-52, M-53, M-56, M-58, M-67, M-68, M-69, M-72, M-78, M-79, M-82, M-84, M-89, M-90, M-91, M-92, M-94, M-98, M-99, M-100, M-101, M-104, M-106, M-107, M-109, M-112, M-113, M-114, M-116, M-118, M [illegible] M-121, M-124, M-127, M-128, M-130, M-131, M-136, M-1[illegible] [illegible]-143, M-144, M-145, M-146, M-148, M-149, M-150 [illegible] M-157, M-159, M-162, M-164, M-165, M-170, M[illegible]-174, M-180, M-182, M-184, M-189, M-194, M-198, [illegible]0, M-203, M-209, M-211, M-212, M-213, M-217, M-221, M[illegible], M-228, M-230, M-231, M-234, M-237, M-238, M-239, M-241, M-242, M-245, M-248, M-249, M-255, M-257, M-260, M-263, M-264, M-265, M-266, M-267, M-269, M-274, M-275, M-277, M-280, M-281, M-284, M-286, M-288, M-289, M-291, M-294, M-297, M-300, M-301, M-304, M-306, M-307, M-309, M-310, M-314, M-319, M-320, M-322, M-324, M-326, M-327, M-595, M-625, M-626, M-628, M-629, M-634, M-637, M-638, M-644, M-647, M-646, M-648, M-655, M-665, M-671, M-672, M-677, M-678, M-682, M-683, M-693, M-699.

see end table



Sign # **289** Total 183 Varieties 3 Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	9	171	2	1
Percent	0.22	7.94	0.56	0.19

Class: SIM
Type: Oth

Mohenjo-daro: M-509 to M-512 (CopTab). M-478 to M-480 (Bas). M-500 (But). M-1425 (Bas)
Harappa: Bas Relief Tablets-> H-206. H-211 to H-219. H-229 to H-233. H-236. H-237. H-239. H-245. H-246. H-248. H-249. H-251. H-697. H-702. H-703. H-732 to H-735. H-762. H-763. H-766. H-768 to H-778. H-780. H-781. H-783. H-784. H-785. H-788. H-789 to H-796. H-798 to H-802. H-812 to H-819. H-821 to H-824. H-829. H-833. H-834. H-837. H-838. H-846. H-849. H-850. H-852. H-853. H-857. H-876. H-877:
Incised Tablets-> H-285. H-296 to H-298. H-302. H-303. H-306 to H-309. H-311 to H-317. H-340. H-341 to H-345. H-350 to H-359. H-361 to H-363. H-369. H-891. H-892. H-900. H-903. H-904. H-910. H-912. H-914. H-915. H-916. H-918. H-924. H-925. H-927 to H-931. H-933 to H-936. H-938. H-942 to H-953. H-966. H-959 to H-964. H-966. H-969. H-975 to H-982. H-985 to H-987
Lothal : L-182. L-217
Unknown: ?-6



Sign # **290** Total 75 Varieties 1 Set 21.3

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	52	12	3	8
Percent	1.27	0.56	0.83	1.53

Class: MKD
Type: Ifx

Mohenjo-daro: M-27. M-51. M-85.M-113. M-120. M-128. M-129. M-131.M-139. M-159. M-160. M-165. M-170. M-196. M-203. M-220. M-241. M-293. M-306. M-320. M-326. M-627. M-647. M-648. M-661. M-663. M-725. M-745. M-746. M-755. M-786. M-800. M-802. M-820. M-837. M-843. M-863. M-878. M-909. M-926. M-933. M-964. M-965. M-968. M-975. M-1078. M-1081. M-1114. M-1116. M-1119. M-1190: Type C-> M-1360
Harappa: H-50. H-76. H-82. H-89. H-102. H-450. H-515. H-519. H-599. H-610. H-776 (Bas). H-890 (Bas)
Lothal: L-28. L-45. L-48
Kalibangan: K-4. K-5. K-13. K-14
Chanhumjo-daro: C-8. C-16. C-33
Rakhigarhi: Rgr-1



Sign # **291** Total 22 Varieties 1 Set 21.5.3

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	17	2	1	2
Percent	0.42	0.09	0.28	0.38

Class: MKD
Type: Ifx

Mohenjo-daro: M-59. M-68. M-105. M-274. M-304. M-709. M-758. M-862. M-892. M-1151. M-1631 (Bng): Type C-> M-369. M-387. M-407. M-1272. M-1280. M-1350
Harappa: H-36. H-270
Lothal: L-79
Kalibangan: K-43. K-91 (Pot)

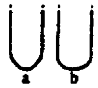


Sign # **292** Total 15 Varieties 1 Set 21.5.3

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	12	3		
Percent	0.29	0.14		

Class: MKD
Type: Ifx

Mohenjo-daro: M-9. M-633. M-638. M-671. M-1046. M-1111. M-1424 (Bas): Type C-> M-363. M-366. M-1262. M-1292. M-1353
Harappa: H-2. H-39. H-199 (Bas)



Sign # **293** Total 11 Varieties 2 Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	7	4		
Percent	0.17	0.19		

Class: SIM
Type: Oth

Mohenjo-daro: M-192, M-279, M-329, M-330, M-495 (Bas), M-721, M-1431
Harappa: H-454, 745 (Bas), H-764 (Bas), H-765 (Bas)



Sign # **294** Total 6 Varieties 1 Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	3	1	1
Percent	0.02	0.14	0.28	0.19

Class: MKD
Type: Ifx

Mohenjo-daro: M-1135
Harappa: H-3, H-87, H-745 (Bas)
Lothal: L-217 (Bas)
Kalibangan: K-14



Sign # **295** Total 5 Varieties 1 Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	2		2
Percent	0.02	0.09		0.38

Class: MKD
Type: Ifx

Mohenjo-daro: M-192
Harappa: H-450, H-408
Chanhumjo-daro: C-24
Unknown: ?-6



Sign # **296** Total 4 Varieties 1 Set 21.3

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3		1	
Percent	0.07		0.28	

Class: MKD
Type: Ifx

Mohenjo-daro: Type C-> M-378, M-632, M-1333
Lothal: L-272 (Pot)



Sign # **297** Total 2 Varieties 1 Set 21.3

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: MKD
Type: Ifx

Mohenjo-daro: M-1630 (Bng): Copper Tablets-> MacKay: CIII 2



a b

Sign # **298** Total 2 Varieties 2 Set 21.3

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: MKD
Type: Ifx

Mohenjo-daro: Type C-> a) M-1300; b) M-1336



Sign # **299** Total 1 Varieties 1 Set 21.3

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: MKD
Type: Ifx

Naru-Waro-dharo: Nwd-3 (Pot)



Sign # **300** Total 1 Varieties 1 Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: MacKay-> No. 560

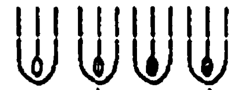


Sign # **301** Total 77 Varieties 3 Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	54	13	4	6
Percent	1.32	0.60	1.11	1.15

Class: CMP
Type: Ifx

Mohenjo-daro: M-4, M-44, M-50, M-54, M-72, M-86, M-100, M-117, M-118, M-122, M-128, M-135, M-248, M-276, M-286, M-303, M-426 (Tag), M-670, M-677, M-714, M-754, M-757, M-785, M-797, M-814, M-840, M-860, M-863, M-864, M-928, M-932, M-956, M-957, M-959, M-985, M-997, M-1057, M-1067, M-1168, M-1155, M-1191, M-1200, M-1226, M-1629 (Bng); Type C-> M-355, M-359, M-365, M-1299, M-1328, M-1355, M-1364; Copper Tablets-> Marshall: CXVII 5, 6; CXVIII 2
Harappa: H-24, H-25, H-383, H-455, H-468, H-550, H-175 (Bas), H-768 (Bas), H-206 (Bas); Type C-> H-136, H-137, H-641, H-649
Lothal: L-10, L-11, L-144 (Tag), L-146 (Tag)
Kalibangan: K-89
Chanhujo-daro: C-7, C-9, C-38
Chandigarh: Ch-2
Rakhigarhi: Rgr-2



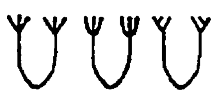
a b c d

Sign # **302** Total 46 Varieties 4 Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	30	15		1
Percent	0.73	0.70		0.19

Class: CMX
Type:

Mohenjo-daro: a) M-8, M-10, M-25, M-314, M-621, M-631, M-674, M-675, M-677, M-747, M-753, M-781, M-796, M-892, M-1014, M-1079, M-1091; b) M-1633 (Bng); c) M-64, M-65, M-236, M-1103, M-1203; d) M-781; Type C-> a) M-1270, M-1290, M-1323, M-1359 c) M-1269; Copper Tablets-> Marshall: CXVII 11
Harappa: a) H-5, H-8, H-30, H-44, H-53, H-268, H-388; b) H-417, H-456; Type C-> a) H-131, H-149, H-153, H-647, H-660, H-682
Khirsara: a) Krs-1



Sign # **303** Total 30 Varieties 3 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	20	5	2	3
Percent	0.49	0.23	0.56	0.57

Class: CMP
Type: Cnf

Mohenjo-daro: M-47, M-55, M-149, M-239, M-275, M-284, M-314, M-700, M-733, M-735, M-843, M-862, M-1070, M-1071, M-1079, M-1100, M-1103, M-1155, M-1163, M-1177
Harappa: H-13, H-101, H-161, H-593, H-973 (IncBut)
Lothal: L-5, L-211 (Tag)
Kalibangan: K-24, K-40
Nindowari-damb: Nd-1



a b c

Sign # **304** Total 27 Varieties 7 Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	13	8	1	5
Percent	0.32	0.37	0.28	0.96

Class: CMX
Type:

Mohenjo-daro: a) M-216, M-258, M-655, M-1136; b) M-3, M-52, M-275, M-713; Type C-> b) M-1270; c) M-360, M-376, M-391; Copper Tablets-> c) Marshall: CXVII 10
Harappa: b) H-63, H-103, H-271, H-476, H-601, H-764 (Bas); Type C-> b) H-643; c) H-130
Lothal: c) L-104
Kalibangan: a) K-6, K-40; b) K-11
Chanhujo-daro: a) C-5
Bala-kot: a) Blk-2



Sign # 305

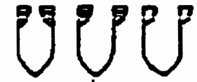
Total 23 Varieties 4 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	16	5		2
Percent	0.39	0.23		0.38

Class: CMX

Type:

Mohenjo-daro: M-28, M-106, M-112, M-114, M-162, M-165, M-198, M-274, M-456 (Bas), M-707, M-754, M-758, M-818, M-859, M-957, M-1019
Harappa: Bas Tablets-> H-200, H-201, H-202; Inc. Tablet-> H-879, H-912
Lohumjo-daro: Lh-1
Rakhigarhi: Rgr-1



Sign # 306

Total 13 Varieties 3 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	11	2		
Percent	0.27	0.09		

Class: CMX

Type:

Moehnjo-daro: M-30, M-394, M-397, M-678; Type C-> M-1275; Copper Tablets-> c) MacKay: CIII 1; XCIII 9; Marshall: CXVIII 4; CXVII 8, 12, 15
Harappa: H-47, H-58



Sign # 307

Total 12 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	11	1		
Percent	0.27	0.05		

Class: CMP

Type: Cnf

Mohnejo-daro: M-5, M-118, M-152, M-705, M-706, M-750, M-780, M-903, M-958; Copper Tablets-> MacKay: XCIII 13; CIII 7
Harappa: Type C-> H-135



Sign # 308

Total 5 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	2	2	
Percent	0.02	0.09	0.56	

Class: CMX

Type:

Mohenjo-daro: M-14
Harappa: H-6
Kalibangan: K-63
Chanhumjo-daro: C-40 (CpO)

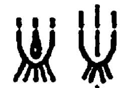


Sign # **309** Total 4 Varieties 2 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4			
Percent	0.10			

Class: SIM
Type: Oth

Mohenjo-daro: M-242, M-724, M-1058; Type C-> M-1289



a b

Sign # **310** Total 3 Varieties 2 Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	2		
Percent	0.02	0.09		

Class: CMX
Type:

Mohenjo-daro: b) M-1049
Harappa: a) H-226 (Bas), H-228 (Bas)



Sign # **311** Total 3 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			
Percent	0.07			

Class: CMX
Type:

Mohenjo-daro: M-172, M-758; Type C-> M-414



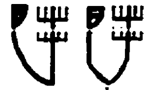
a b

Sign # **312** Total 3 Varieties 1 Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			
Percent	0.07			

Class: CMX
Type:

Mohenjo-daro: a) M-74, M-662; b) M-1200



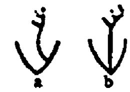
a b

Sign # **313** Total 2 Varieties 2 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: CMP
Type: Cnf

Mohenjo-daro: a) Type C-> M-360
Harappa: b) H-478



a b

Sign # **314** Total 2 Varieties 2 Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: CMP
Type: Cnf

Mohenjo-daro: a) M316; b) M-784



a b

Sign # **315** Total 2 Varieties 2 Set 21.8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: MKD
Type: Dia

Mohenjo-daro: b) M-810; Type C-> a) M-354



Sign # **316** Total 2 Varieties 1 Set 21.8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: CMX
Type:

Mohenjo-daro: M-308; Type C-> M-1355

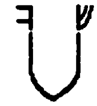


Sign # 317 Total 2 Varieties 2 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1		1	
Percent	0.02		0.28	

Class: CMX
Type:

Mohenjo-daro: M-1267
Lothal: L-36



Sign # 318 Total 1 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Cnf

Mohenjo-daro: MacKay-> No. 662

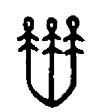


Sign # 319 Total 1 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMP
Type: Ifx

Harappa: H-598

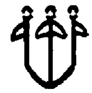


Sign # 320 Total 1 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMX
Type:

Harappa: H-577



Sign # **321** Total 1 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMX
Type:

Kalibangan: K-15



Sign # **322** Total 1 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-84



Sign # **323** Total 1 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-713



Sign # **324** Total 1 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMP
Type: Ifx

Kalibangan: K-18



Sign # **325** Total 1 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-1281



Sign # **326** Total 1 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMP
Type: Cnf

Harappa: H-14



Sign # **327** Total 1 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMP
Type: Cnf

Chanhujo-daro: C-13



Sign # **328** Total 1 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Mlt

Mohenjo-daro: M-639



Sign # **329** Total 1 Varieties 1 Set 21.8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Ifx

Harappa: H-449



Sign # **330** Total 1 Varieties 1 Set 21.8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-89



Sign # **331** Total 1 Varieties 1 Set 21.8

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-852



Sign # **332** Total 1 Varieties 1 Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMX
Type:

Harappa: H-772 (Bas)



Sign # 333 | Total 1 | Varieties 1 | Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-232



Sign # 334 | Total 1 | Varieties 1 | Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: M-27



Sign # 335 | Total 1 | Varieties 1 | Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Ifx

Mohenjo-daro:M-760

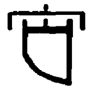


Sign # 336 | Total 1 | Varieties 1 | Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	
Percent			0.28	

Class: CMP
Type: Ifx

Lothal: b) L-11



Sign # 337 Total 1 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	
Percent			0.28	

Class: MKD
Type: Dia

Lothal: L-93



Sign # 338 Total 2 Varieties 1 Set 21.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: Cmp
Type: Inf

see Parpola (1992:112;fig.7.14) Class C2, cf. B7 for replacement set.



Sign # 339 Total 1 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Ifx

Mohenjo-daro: Copper Tablets-> MacKay: XCIII 1



Sign # 340 Total 1 Varieties 1 Set 21.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: Copper Tablets-> MacKay: XCIII 3

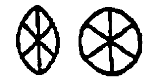


Sign #
341 Total 127 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	70	29	15	13
Percent	1.71	1.35	4.17	2.49

Class: CMX
Type:

Mohenjo-daro: M-14, M-32, M-42, M-58, M-75, M-80, M-90, M-101, M-110, M-116, M-141, M-144, M-148, M-164, M-165, M-177, M-198, M-204, M-221, M-245, M-246, M-259, M-278, M-282, M-289, M-314, M-644, M-646, M-650, M-658, M-692, M-703, M-720, M-722, M-732, M-776, M-792, M-803, M-816, M-819, M-823, M-825, M-835, M-839, M-851, M-853, M-855, M-868, M-895, M-897, M-929, M-940, M-944, M-963, M-976, M-984, M-1085, M-1110, M-1126, M-1166, M-1177, M-1226, M-471 (Bas), M-1391 (Tag); Type C-> M-362, M-364, M-408, M-1268, M-1299, M-1311
Harappa: H-13, H-15, H-42, H-54, H-85, H-266, H-388, H-407, H-456, H-459, H-478, H-484, H-501, H-609, H-694 (Bas), H-695 (Bas), H-697 (Bas), H-778 (Bas), H-825 (Bas), H-901 (Bas) to H-904 (Bas), H-300 (Inc),H-987 (Inc); Type C-> H-137, H-140, H-154, H-658
Lothal: L-11, L-41, L-84, L-92, L-161 (Tag) to L-171 (Tag)
Kalibangan: K-27, K-78 (Bas).Chanhujo-daro: C-4, C-10, C-18, C-23.
Banawali: B-5, B-7, B-15. Desalpur: Dlp-1. Dholavira: Dvl-2. Jhukar: Jk-2.
Nindowari-damb: Nd-1



Sign #
342 Total 125 Varieties 2 Set 22f

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	80	27	7	11
Percent	1.95	1.25	1.94	2.10

Class: CMX
Type:

Mohenjo-daro: M-6, M-16, M-31, M-41, M-48, M-54, M-86, M-103, M-108,M-117, M-157, M-160, M-163, M-174, M-205, M-200, M-202, M-214, M-235, M-260, M-268, M-288, M-300, M-303, M-314, M-322, M-326, M-437 (Bas), M-595, M-621, M-634, M-649, M-651, M-662, M-664, M-700, M-727, M-726, M-728, M-750, M-808, M-865, M-875, M-889, M-900, M-931,M-998, M-1045, M-1066, M-1088, M-1103, M-1104, M-1109, M-1119, M-1134, M-1136, M-1137, M-1138, M-1139, M-1178, M-1369 (But), M-1640 (Bng); Type C-> M-356, M-357, M-361, M-372, M-375, M-381, M-384, M-385, M-390, M-400, M-1264, M-1286, M-1290, M-1306, M-1309, M-1329, M-1346, M-1354
Harappa: H-1, H-10, H-18, H-19, H-26, H-45, H-60, H-80, H-88, H-273, H-390, H-472, H-506, H-507, H-514, H-558, H-574, H-598, H-688, H-176 (Bas), H-231 (Bas), H-833 (Bas), H-829 (Bas), H-909(Inc), H-992 (Pot); Type C-> H-649, H-653
Lothal: L-18, L-21, L-137 (Tag), L-148 (Tag), L-208 (Tag); Type C-> L-122
Kalibangan: K-6, K-16, K-23, K-78 (Bas). Rakhigarhi: Rgr-3 (Tag). Surkotada: Sktd-1, Sktd-3 (Pot), Sktd-4 (Pot). Nausharo: Ns-5, Ns-7.
Unknown: ?-5



Sign #
343 Total 67 Varieties 5 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	33	31	3	
Percent	0.81	1.44	0.83	

Class: MKD
Type: Ovt

Mohenjo-daro: M-10, M-29, M-30, M-173, M-472 (Bas), M-656, M-678, M-686, M-759, M-916, M-1052; Type C-> M-357, M-358, M-369, M-370, M-371, M-391, M-392, M-393, M-405, M-409, M-1265, M-1287, M-1306, M-1319, M-1323, M-1324, M-1334; Copper Tablets-> MacKay: XCIII 3, 12, 14; Marshall: CXVIII 1, 2;
Harappa: H-20, H-21, H-22, H-25, H-27, H-58, H-78, H-103, H-388, H-396, H-190(Bas), H-204 (Bas), H-724 (Bas), H-753 (Bas), H-775 (Bas); Type C-> H-130, H-132, H-135, H-143, H-145, H-146, H-152, H-154, H-160, H-649, H-654, H-661, H-667, H-670, H-679, H-681
Lothal: L-19, L-82, L-83

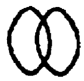


Sign #
344 Total 64 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	49	10	1	4
Percent	1.20	0.46	0.28	0.76

Class: MKD
Type: Ovt

Mohenjo-daro: M-27, M-44, M-52, M-69, M-77, M-105, M-115, M-117, M-128, M-147, M-236, M-238, M-249, M-253, M-277, M-325, M-481 (Bas), M-482 (Bas), M-626, M-667, M-682, M-705, M-707, M-711, M-713, M-714, M-726, M-760, M-800, M-806, M-811, M-814, M-819, M-889, M-917, M-931, M-977, M-985, M-992, M-1021, M-1079, M-1119, M-1154, M-1424 (Bas); Type C-> M-359, M-384, M-1280, M-1350, M-1366
Harappa: H-12, H-35, H-38, H-44, H-268, H-270, H-405, H-501, H-574, H-592
Lothal: L-205 (Tag)
Kalibangan: Type C-> K-62
Chanhujo-daro: C-8, C-9
Jhukar: Jk-2

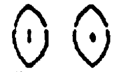


Sign # 345 Total 51 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	23	21	3	4
Percent	0.56	0.97	0.83	0.76

Class: CMP
Type: Dbl

Mohenjo-daro: M-28, M-56, M-90, M-113, M-116, M-120, M-143, M-162, M-198, M-241, M-299, M-326, M-453 (Bas), M-454 (Bas), M-495 (Bas), M-996, M-1089, M-1152, M-1224, M-1634 (Bng), M-1644 (Bng); Type C-> M-411, M-1285
Harappa: H-88, H-172 (Bas), H-182 (Bas), H-186 (Bas), H-236 (Bas), H-306 (Inc), H-410, H-469, H-483, H-569, H-705 (Bas), H-723 (Bas), H-770 (Bas), H-771, (Bas), H-825 (Bas), H-844 (Bas), H-924 (Inc), H-925 (Inc), H-1012 (Con); Type C-> H-131, H-147
Lothal: L-22, L-59, L-87
Chanhujo-daro: C-1, C-29
Allahdino: Ad-6
Gumla: G-8 (Pot)



With variations between

Sign # 346 Total 17 Varieties 2 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	10	4	2	1
Percent	0.24	0.19	0.56	0.19

Class: MKD
Type: Ifx

Mohenjo-daro: M-77, M-139, M-150, M-205, M-415 (But), M-855, M-831, M-1369 (But); Type C-> M-370, M-396
Harappa: H-396, H-568, H-797 (Bas); Type C-> H-142
Lothal: L-57; Type C-> L-92
Kalibangan: K-120 (Pot)



Sign # 347 Total 17 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	13	3	1	
Percent	0.32	0.14	0.28	

Class: MKD
Type: Ifx

Mohenjo-daro: Type C-> M-354, M-391, M-1293, M-1295, M-1330; Copper Tablets-> MacKay: XCIII 3, 4, 10, 14; Marshall: CXVII 5, 6, 9; CXVIII 5
Harappa: Type C-> H-132, H-639, H-659
Lothal: L-86



Sign # 348 Total 16 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	7	6		3
Percent	0.17	0.28		0.57

Class: SIM
Type: Oth

Mohenjo-daro: M-121, M-131, M-157, M-724, M-748, M-1202; MacKay: XCIII 14
Harappa: H-479, H-764 (Bas), H-841 (ButTab), H-842 (ButTab); Type C-> H-664, H-668
Kalibangan: K-11
Chanhumjo-daro: C-22
Desalpur: Dlp-2



Sign # **349** Total 12 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	6	6		
Percent	0.15	0.28		

Class: MKD
Type: Ifx

Mohenjo-daro: M-45, M-207, M-321, M-798, M-824, M-1081
Harappa: H-40, H-331 (Bas), H-412, H-513, H-688, H-908 (Inc)

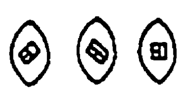


Sign # **350** Total 11 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	5	6		
Percent	0.12	0.28		

Class: CMX
Type:

Mohenjo-daro: M-309, M-701, M-872, M-1189, M-1297
Harappa: H-360 (Inc), H-786 (Bas), H-787 (Bas), H-905 (Inc) to 907 (Inc)



With variations between

Sign # **351** Total 9 Varieties 3 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	6	2	1	
Percent	0.15	0.09	0.28	

Class: MKD
Type: Ovt

Mohenjo-daro: M-92, M-133, M-314, M-319, M-634, M-756
Harappa: Type C-> H-130, H-642
Lothal: L-1



Sign # **352** Total 8 Varieties 1 Set 1.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	5	3		
Percent	0.12	0.14		

Class: CMP
Type: Att

Mohenjo-daro: M-16, M-265, M-699, M-835, M-932
Harappa: H-219 (Bas), H-565, H-801 (Bas)

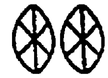


Sign # 353 Total 7 Varieties 1 Set 22.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	5	1		1
Percent	0.12	0.05		0.19

Class SIM
Type Oth

Mohenjo-daro: M-46, M-99, M-268, M-324, M-1599 (Pot)
Harappa: H-656
Khirsara: Krs-1

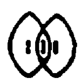


Sign # 354 Total 6 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	1	1	1
Percent	0.07	0.05	0.28	0.19

Class CMP
Type Dbl

Mohenjo-daro: M-111, M-933, M-1384 (Tag)
Harappa: H-176 (Bas)
Lothal: L-217 (Tab)
Banawali: B-1



Sign # 355 Total 5 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4		1	
Percent	0.10		0.28	

Class MKD
Type Ifx

Mohenjo-daro: M-115, M-166, M-907; Type C-> M-368
Lothal: L-110



Sign # 356 Total 5 Varieties 2 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	2		
Percent	0.07	0.09		

Class CMX
Type

Mohenjo-daro: M-89, M-1091, M-1116
Harappa: Type C-> H-131, H-149



Sign # **357** Total 5 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4	1		
Percent	0.10	0.05		

Class: MKD
Type: Ovt

Mohenjo-daro: M-757, M-833, M-1097, M-1191
Harappa: H-456

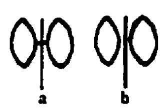


Sign # **358** Total 4 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	1		
Percent	0.07	0.05		

Class: MKD
Type: Mlt

Mohenjo-daro: M-250, M-256, M-794
Harappa: H-246 (Bas)



Sign # **359** Total 4 Varieties 1 Set 1.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			1
Percent	0.07			0.19

Class: CMP
Type: Att

Mohenjo-daro: a) M-326, M-1180, M-1112
Chanhumjo-daro: b) C-20



Sign # **360** Total 3 Varieties 1 Set 22.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		3		
Percent		0.14		

Class: CMP
Type: Att

Harappa: a) H-17, H-386, H-61

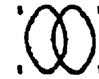


Sign # **361** Total 3 Varieties 1 Set 22.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		2		1
Percent		0.09		0.19

Class: CMP
Type: Cnf

Harappa: H-155, H-446
Kalibangan: K-20



Sign # **362** Total 3 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			
Percent	0.07			

Class: MKD
Type: Cnd

Mohenjo-daro: M-234, M-626, M-1014



Sign # **363** Total 3 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			
Percent	0.07			

Class: MKD
Type: Ovt

Mohenjo-daro: M-118, M-959, M-1153



Sign # **364** Total 3 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			
Percent	0.07			

Class: CMP
Type: Dbl

Mohenjo-daro: M-853, M-926, M-953



Sign # **365** Total 2 Varieties 1 Set 22.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: CMP
Type: Dbl

Mohenjo-daro: M-12
Harappa: H-184



Sign # **366** Total 2 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			1
Percent	0.02			0.19

Class: MKD
Type: Ovt

Mohenjo-daro: M-1134
Khirsara: Krs-1



Sign # **367** Total 2 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1		1	
Percent	0.02		0.28	

Class: CMX
Type:

Mohenjo-daro: M-982
Lothal: L-87



Sign # **368** Total 2 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			1
Percent	0.02			0.19

Class: MKD
Type: Mlt

Mohenjo-daro: M-1082
Nausharo: Ns-9



Sign # **369** Total 1 Varieties 1 Set 22.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMP
Type: Att

Harappa: H-144

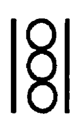


Sign # **370** Total 1 Varieties 1 Set 22.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-446 (Bas)

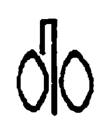


Sign # **371** Total 1 Varieties 1 Set 22.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Enc

Harappa: H-465



Sign # **372** Total 1 Varieties 1 Set 1.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Oth

Mohenjo-daro: M-777



Sign # **373** Total 1 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ovt

Mohenjo-daro: M-17



Sign # **374** Total 1 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Cgd

Mohenjo-daro: M-675



Sign # **375** Total 1 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: Type C-> M-373



Sign # **376** Total 1 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-272



Sign # **377** Total 1 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-83



Sign # **378** Total 1 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: M-196



Sign # **379** Total 1 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Ovt

Harappa: H-558



Sign # **380** Total 1 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Ovt

Harappa: Type C-> H-142

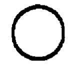


Sign # 381 Total 1 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	
Percent			0.28	

Class: MKD
Type: Ovt

Lothal: Type C-> L-114



Sign # 382 Total 1 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: SIM
Type: Oth

Kalibangan: K-40



Sign # 383 Total 1 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Ifx

Harappa: H-410



Sign # 384 Total 1 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Brk

Mohenjo-daro: M-391



Sign # **385** Total 1 Varieties 1 Set 1.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: MKD
Type: Enc

Allahdino: Ad-6



Sign # **386** Total 1 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ovt

Mohenjo-daro: M-306



Sign # **387** Total 1 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: Copper Tablets-> MacKay: XCIII 2



Sign # **388** Total 1 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type: Mir

Mohenjo-daro: Copper Tablets-> MacKay: XCIII 4



Sign # 389 Total 2 Varieties 1 Set 22

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			1
Percent	0.02			0.19

Class: MKD
Type: Enc

Mohenjo-daro: M-190
Chanjujo-daro: C-30



Sign # 390 Total 105 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	65	21	12	7
Percent	1.59	0.97	3.33	1.34

Class: CMX
Type:

Mohenjo-daro: M-1, M-7, M-15, M-19, M-21, M-28, M-47, M-72, M-79, M-91, M-100, M-118, M-142, M-152, M-170, M-175, M-196, M-199, M-240, M-258, M-285, M-316, M-327, M-329, M-330, M-629, M-653, M-656, M-663, M-677, M-706, M-712, M-714, M-717, M-723, M-724, M-781, M-783, M-785, M-793, M-794, M-813, M-815, M-834, M-850, M-869, M-880, M-918, M-934, M-941, M-967, M-1044, M-1063, M-1095, M-1148, M-1152, M-1160, M-1161, M-1206; Type C-> M-355, M-376, M-389, M-391, M-1273, M-1343
Harappa: H-51, H-55, H-102, H-410, H-444, H-446, H-458, H-473, H-486, H-597, H-305 (Bas), H-343 (Bas), H-719 (Bas), H-923 (Inc); Type C-> H-129, H-134, H-135, H-139, H-155, H-651, H-688
Lothal: L-29, L-39, L-46, L-57, L-60, L-62, L-65, L-89, L-130 (Tag), L-133 (Tag), L-202 (Tag), L-220 (Bas)
Kalibangan: K-6, K-10, K-33, K-40, K-82 (Tag)
Dholavira: Dlv-1
Allahdino: Ad-8



Sign # 391 Total 14 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	8	5	1	
Percent	0.20	0.23	0.28	

Class: CMX
Type:

Mohenjo-daro: M-217, M-874, M-880, M-1225; Type C-> M-355, M-1302, M-1305, M-1309
Harappa: H-27, H-442, H-586, H-343 (BufTab); Type C-> H-143
Lothal: L-222 (Pot)



Sign # 392 Total 12 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	10	1		1
Percent	0.24	0.05		0.19

Class: SIM
Type: Oth

Mohenjo-daro: M-172, M-306, M-667, M-726, M-733, M-742, M-1002, M-1055; Copper Tablets-> MacKay: XCIII 3; CIII 3
Harappa: H-385
Chanhumjo-daro: C-24

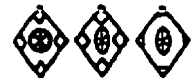


Sign # **393** Total 7 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	7			
Percent	0.17			

Class: CMX
Type:

Mohenjo-daro: M-104, M-184, M-195, M-275, M-281, M-852, M-1224



Sign # **394** Total 5 Varieties 3 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	5			
Percent	0.12			

Class: CMP
Type: Ifx

Mohenjo-daro: M-6, M-145, M-225, M-655; Type C-> M-1318



Sign # **395** Total 3 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		3		
Percent		0.14		

Class: CMX
Type:

Harappa: H-299 (Bas), H-897 (Bas), H-899 (Bas)



Sign # **396** Total 2 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		2		
Percent		0.09		

Class: CMP
Type: Ifx

Harappa: H-511, H-909 (Inc)



Sign # 397 Total 2 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		2		
Percent		0.09		

Class: MKD
Type: Cpd

Harappa: H-572, H-96



Sign # 398 Total 2 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: CMX
Type:

Mohenjo-daro: M-109, M-255



Sign # 399 Total 1 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Ifx

Mohenjo-daro: M-134



Sign # 400 Total 1 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-151



Sign # **401** Total 1 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Att

Mohenjo-daro: a) M-293



Sign # **402** Total 1 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-1154



Sign # **403** Total 1 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMP
Type: Att

Harappa: H-405



Sign # **404** Total 1 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	
Percent			0.28	

Class: CMX
Type:

Lothal: L-48



Sign # 405 Total 1 Varieties 1 — Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD — Type: Dmd

Mohenjo-daro: M-120



Sign # 406 Total 1 Varieties 1 — Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD — Type: Enc

Mohenjo-daro: M-1117



Sign # 408 Total 1 Varieties 1 — Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX — Type:

Mohenjo-daro: M-23



Sign # 409 Total 1 Varieties 1 — Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD — Type: Cgd

Mohenjo-daro: MacKay-> No. 435



Sign # **410** Total 1 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Ifx

Mohenjo-daro: M-1116

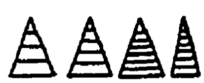


Sign # **411** Total 1 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMP
Type: Ifx

Kalibangan: K-15



Sign # **412** Total 48 Varieties 4 Set 25

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	26	16	3	3
Percent	0.64	0.74	0.83	0.57

Class: CMX
Type:

Mohenjo-daro: M-14, M-29, M-30, M-58, M-101, M-245, M-246, M-678, M-809, M-859, M-861, M-937, M-961, M-1095; Type C-> M-362, M-374, M-1307, M-1318, M-1353, M-1363; Copper Tablets-> MacKay: XCIII 9; CIII 1; Marshall: CXVII 7, 8, 12; CXVIII 4
Harappa: H-13, H-139, H-157, H-174 (Bas), H-187 (Bas), H-408, H-453, H-523, H-599, H-707 (Bas) to 710 (Bas), H-712 (Bas); Type C-> H-641, H-666
Lothal: L-10, L-20, L-78
Kalibangan: K-89 (Tag)
Allahdino: Ad-4, Ad-8



Sign # **413** Total 38 Varieties 1 Set 25

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		38		
Percent		1.76		

Class: CMX
Type:

Harappa: H-252 (Bas) to H-276 (Bas), H-756 (Bas), H-859 (Bas) to H- 870 (Bas)



Variations in orientation depend on available space

Sign # **414** Total 33 Varieties 4 Set 25.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	26	5	1	1
Percent	0.64	0.23	0.28	0.19

Class: SIM
Type: Oth

Mohenjo-daro: M-20, M-48, M-51, M-55, M-58, M-92, M-245, M-281, M-379, M-471 (Bas), M-665, M-683, M-723, M-809, M-845, M-870, M-892, M-936, M-937, M-961, M-1085, M-1133, M-1192; Type C-> M-1307, M-1318, M-1353
Harappa: H-86, H-426, H-515, H-728 (Bas), H-729 (Bas)
Lothal: L-10
Kalibangan: K-18



Sign # **415** Total 20 Varieties 1 Set 25.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	8	11	1	
Percent	0.20	0.51	0.28	

Class: SIM
Type: Oth

Mohenjo-daro: M-23, M-280, M-638, M-788, M-866, M-1001, M-1168, M-1424 (Bas)
Harappa: H-47, H-199 (Bas) to H-202 (Bas), H-216 (Bas), H-270, H-441, H-474, H-743 (Bas), H-745 (Bas)
Lothal: L-23

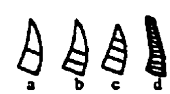


Sign # **416** Total 17 Varieties 1 Set 25.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	11	4	1	1
Percent	0.27	0.19	0.28	0.19

Class: SIM
Type: Oth

Mohenjo-daro: M-10, M-29, M-61, M-140, M-147, M-761, M-808, M-1096, M-1191; Type C-> M-1268, M-1329
Harappa: H-82, H-268, H-477, H-874 (CylTab)
Lothal: L-5
Kalibangan: K-7



Sign # **417** Total 15 Varieties 4 Set 25

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4	4	1	6
Percent	0.10	0.19	0.28	1.15

Class: CMX
Type:

Mohenjo-daro: a) M-740; b) M-325; d) M-196; Type C-> a) M-1322
Harappa: a) H-70; c) H-612, H-900 (Inc), H-901 (Inc)
Lothal: a) L-20
Kalibangan: a) K-28; c) K-63, K-89 (Tag)
Chanhumjo-daro: c) C-20
Naushara: b) Ns-8, Ns-9



Sign # **418** Total 7 Varieties 1 Set 25

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4		3	
Percent	0.10		0.83	

Class: CMX
Type:

Mohenjo-daro: M-128, M-664, M-802, M-1633 (Bng)
Lothal: L-190 (Tag), L-191 (Tag), L-193 (Tag)

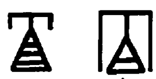


Sign # **419** Total 6 Varieties 1 Set 25.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	2		2
Percent	0.05	0.09		0.38

Class: SIM
Type: Oth

Mohenjo-daro: M-268, M-1384 (Tag)
Harappa: H-389, H-718 (Bas)
Chanhumjo-daro: C-24
Khirsara: Krs-1



a b

Sign # **420** Total 4 Varieties 1 Set 25

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	1		1
Percent	0.05	0.05		0.19

Class: CMX
Type:

Mohenjo-daro: a) M-52, M-285
Harappa: b) H-391
Kalibangan: K-1 (intermediate form)



Sign # **421** Total 4 Varieties 1 Set 25.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	2		
Percent	0.05	0.09		

Class: CMX
Type:

Mohenjo-daro: M-119, M-1271
Harappa: H-474; Type C-> H-666

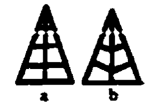


Sign # **422** Total 3 Varieties 1 Set 25.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			
Percent	0.07			

Class: MKD
Type: Dis

Mohenjo-daro: M-219; Type C-> M-1264, M-1271



Sign # **423** Total 3 Varieties 2 Set 25

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			
Percent	0.07			

Class: CMX
Type:

Mohenjo-daro: b) M-181; a) M-678; Type C-> M-358



Sign # **424** Total 3 Varieties 1 Set 25.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			
Percent	0.07			

Class: CMX
Type:

Mohenjo-daro: M-234; Type C-> M-1366, M-1266



Sign # **425** Total 1 Varieties 1 Set 25

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type: Mir

Mohenjo-daro: M-331



Sign # **426** Total 1 Varieties 1 Set 25.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-67



Sign # **427** Total 1 Varieties 1 Set 25.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Dbl

Mohenjo-daro: M-326



Sign # **428** Total 1 Varieties 1 Set 25.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: M-954



Sign # **429** Total 1 Varieties 1 Set 25

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Dia

Mohenjo-daro: M-896



Sign # **430** Total 1 Varieties 1 Set 25.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMP
Type: Att

Kalibangan: K-53



Sign # **431** Total 1 Varieties 1 Set 25.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Dbl

Mohenjo-daro: M-751



Sign # **432** Total 1 Varieties 1 Set 25.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-1424



Sign # **433** Total 1 Varieties 1 Set 25.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Dia

Mohenjo-daro: Type C-> M-367



Sign # **434** Total 1 Varieties 1 Set 25.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: SIM
Type: Oth

Harappa: H-461



Sign # **435** Total 1 Varieties 1 Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Cnf

Mohenjo-daro: M-391



Sign # **436** Total 6 Varieties 1 Set 26

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	5		
Percent	0.02	0.23		

Class: CMP
Type: Cnf

Mohenjo-daro: M-425 (Tag)
Harappa: H-27; Type C-> H-152, H-160, H-670, H-681



Sign # **437** Total 5 Varieties 1 Set 26

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	3		
Percent	0.05	0.14		

Class: CMP
Type: Cnf

Mohenjo-daro: M-371, M-1419 (Bas)
Harappa: H-775 (Bas); Type C-> H-146, H-154



Sign # **438** Total 2 Varieties 1 Set 26

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: CMP
Type: Cnf

Mohenjo-daro: M-357
Harappa: Type C-> H-158



Sign # **439** Total 2 Varieties 1 Set 26

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: CMP
Type: Cnf

Mohenjo-daro: M-470, M-1334

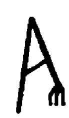


Sign # **440** Total 1 Varieties 1 Set 26

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-4



Sign # **441** Total 1 Varieties 1 Set 26

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Cnf

Mohenjo-daro: M-40



Sign # **442** Total 1 Varieties 1 Set 26 Class MKD Type Cgd

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Mohenjo-daro: M-314



Sign # **443** Total 1 Varieties 1 Set 26 Class CMP Type Cnf

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Harappa: H-189 (Bas)



Sign # **444** Total 1 Varieties 1 Set 26 Class CMP Type Cnf

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Harappa: Type C-> H-132



Sign # **445** Total 1 Varieties 1 Set 26 Class CMP Type Cnf

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Harappa: Type C-> H-143



Sign # **446** Total 1 Varieties 1 Set 26

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Cnf

Mohenjo-daro: Type C-> Marshall-> No. 436



Sign # **447** Total 33 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	20	6	5	2
Percent	0.49	0.28	1.39	0.38

Class: CMX
Type:

Mohenjo-daro: M-49, M-108, M-149, M-158, M-244, M-256, M-307, M-396, M-425 (Tag), M-777, M-833, M-922, M-939, M-955, M-964, M-980, M-1075, M-1080, M-1299, M-1445 (Inc)
Harappa: H-20, H-49, H-611, H-715 (Bas); Type C-> H-645, H-650
Lothal: L-1, L-2, L-58, L-113 ; Type C-> L-122
Kalibangan: K-56
Banawali: B-1



Sign # **448** Total 14 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	9	2	3	
Percent	0.22	0.09	0.83	

Class: MKD
Type: Att

Mohenjo-daro: M-81, M-636, M-821, M-934, M-940, M-1053, M-1320, M-1351: Type C-> M-368
Harappa: H-21, H-386
Lothal: L-9, L-51, L-89



Sign # **449** Total 6 Varieties 3 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	5	1		
Percent	0.12	0.05		

Class: CMP
Type: Att

Mohenjo-daro: M-127, M-237, M-266, M-842, M-1107
Harappa: Type C-> H-679



Sign # **450** Total 6 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3		1	2
Percent	0.07		0.28	0.38

Class: SIM
Type: Oth

Mohenjo-daro: M-393, M-1088, M-1419 (Bas)
Lothal: L-112
Chanhumjo-daro: C-36 (Pot), C-39 (CpO)



Sign # **451** Total 5 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4	1		
Percent	0.10	0.05		

Class: CMX
Type:

Mohenjo-daro: M-132, M-220, M-243, M-1173
Harappa: H-473

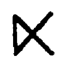


Sign # **452** Total 5 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3		1	1
Percent	0.07		0.28	0.19

Class: CMP
Type: Dbl

Mohenjo-daro: M-126, M-162, M-198
Lothal: L-5
Kot-diji: Kd-8 (Pot)



Sign # **453** Total 3 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			1
Percent	0.05			0.19

Class: SIM
Type: Oth

Mohenjo-daro: M-623, M-725
Kalibangan: K-7



Sign # **454** Total 2 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		1
Percent		0.05		0.19

Class: CMP
Type: Dbl

Harappa: H-37
Kalibangan: K-17



Sign # **455** Total 2 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: CMX
Type:

Mohenjo-daro: M-628, M-1104



Sign # **456** Total 2 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: CMX
Type:

Mohenjo-daro: M-1020
Harappa: Type C-> H-680



Sign # **457** Total 2 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: CMX
Type:

Mohenjo-daro: Type C-> M-376, M-391



Sign # **458** Total 2 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: CMP
Type: Cnf

Mohenjo-daro: M-148, M-632



Sign # **459** Total 1 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Cnf

Mohenjo-daro: M-628



Sign # **460** Total 1 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Cnf

Mohenjo-daro: M-1065



Sign # **461** Total 1 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-107



Sign # **462** Total 1 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: CMX
Type: Mir

Kalibangan: K-6 (cf sign 113)



Sign # **463** Total 1 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-119



Sign # **464** Total 1 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-855



Sign # **465** Total 1 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Ifx

Harappa: H-7



Sign # **466** Total 1 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-304



Sign # **467** Total 1 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-234

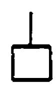


Sign # **468** Total 1 Varieties 1 Set 27

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-1134



Sign # **469** Total 99 Varieties 1 Set 28

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	48	39	8	4
Percent	1.17	1.81	2.22	0.76

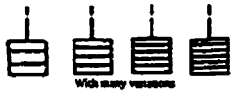
Class: SIM
Type: Oth

Mohenjo-daro: M-12, M-35, M-66, M-94, M-131, M-195, M-203, M-220, M-243, M-248, M-300, M-437 (Bas), M-466 (Bas), M-467 (Bas), M-472 (Bas), M-638, M-672, M-733, M-734, M-746, M-813, M-828, M-834, M-851, M-852, M-855, M-882, M-900, M-958, M-960, M-965, M-968, M-998, M-1017, M-1029, M-1089, M-1091, M-1095; Type C-> M-378, M-392, M-1301, M-1306, M-1310, M-1316, M-1331, M-1336, M-1343; Copper Tablets-> MacKay: XCIII 2

Harappa: H-8, H-50, H-52, H-75, H-180 (Bas), H-194 (Bas), H-204 (Bas), H-282 to H-284 (Bas), H-299 (Inc), H-389, H-449, H-454, H-464, H-466, H-479, H-510, H-515, H-595, H-597, H-611, H-694 (Bas), H-695 (Bas), H-733 (Bas), H-734 (Bas), H-750 to H-755 (Bas), H-897 (Inc), H-898 (Inc), H-899 (Inc), H-951 (Inc); Type C-> H-134, H-158, H-682

Lothal: L-11, L-28, L-43, L-139 (Tag), L-196 (Tag), L-218 (Bas); Type C-> L-112, L-114

Allahdino: Ad-1. Desalpur: Dpl-2. Hulas: Hls-1. Lohumjo-daro: Lh-1. Unknown: ?-3

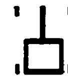


Sign # 470 Total 23 Varieties 4 Set 28

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	12	9	1	1
Percent	0.29	0.42	0.28	0.19

Class: CMX
Type:

Mohenjo-daro: M-74, M-426 (Tag), M-809, M-1052, M-1103, M-1134, M-1191, M-1203; Type C-> M-356, M-1282, M-1290, M-1341 Harappa: H-1, H-271, H-385, H-477, H-506, H-558, H-645; Type C-> H-130, H-131
Lothal: L-93
Kalibangan: K-89 (Tag)

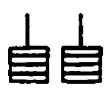


Sign # 471 Total 3 Varieties 1 Set 28

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	2		
Percent	0.02	0.09		

Class: MKD
Type: Cpd

Mohenjo-daro: M-925
Harappa: H-67, H-944 (Inc)

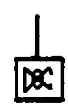


Sign # 472 Total 1 Varieties 1 Set 28

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMP
Type: Dbl

Harappa: H-10



Sign # 473 Total 1 Varieties 1 Set 28

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Ifx

Mohenjo-daro: M-1106



Sign # **474** Total 1 Varieties 1 Set 28

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: Copper Tablets-> MacKay: CIII 6



Sign # **475** Total 27 Varieties 1 Set 29

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	14	8	4	1
Percent	0.34	0.37	1.11	0.19

Class: SIM
Type: Oth

Mohenjo-daro: M-65, M-67, M-74, M-258 M-318, M-624, M-665, M-856, M-909, M-960, M-1016, M-1424 (Bas); Type C-> M-393, M-1052
Harappa: H-1, H-78, H-296, H-432, H-458, H-592, H-774; Type C-> H-131
Lothal: L-4, L-219 (Tag); Type C-> L-103, L-115
Khirsara: Krs-2



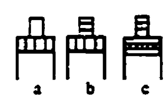
With variations between

Sign # **476** Total 22 Varieties 3 Set 29

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	14	6		2
Percent	0.34	0.28		0.38

Class: CMX
Type:

Mohenjo-daro: M-98, M-120, M-722, M-776, M-798, M-1112, M-1138; Type C-> M-1326; Copper Tablets-> MacKay: XCIII 1, 8, 11; Marshall: CXVIII 2, 3; CXVII 3
Harappa: H-3, H-268, H-383, H-446, H-472; Type C-> H-136
Kalibangan: K-2, K-13



Sign # **477** Total 3 Varieties 3 Set 29

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		1
Percent	0.02	0.05		0.19

Class: CMX
Type:

Mohenjo-daro: b) M-159
Harappa: a) H-360 (Inc)
Chanhumjo-daro: c) C-8

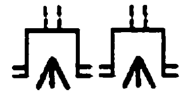


Sign # 478 Total 1 Varieties 1 Set 29

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Dia

Mohenjo-daro: M-742

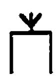


Sign # 479 Total 1 Varieties 1 Set 29

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Dbl

Mohenjo-daro: M-1262

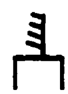


Sign # 480 Total 1 Varieties 1 Set 29

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: Type C-> M-1263



Sign # 481 Total 1 Varieties 1 Set 29

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-649



Sign # 482 Total 1 Varieties 1 Set 29

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-241



Sign # 483 Total 1 Varieties 1 Set 29

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMX
Type:

Harappa: H-473



Sign # 484 Total 1 Varieties 1 Set 29

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: Copper Tablets-> MacKay: CIII 4



Sign # 485 Total 5 Varieties 1 Set 30

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	3		
Percent	0.05	0.14		

Class: SIM
Type: Oth

Mohenjo-daro:, M-31, M-326
Harappa: H-426, H-580

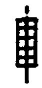


Sign # **486** Total 4 Varieties 2 Set 30

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	1		1
Percent	0.05	0.05		0.19

Class: SIM
Type: Oth

Mohenjo-daro: M-281, M-723
Harappa: H-162
Allahdino: Ad-5

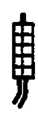


Sign # **487** Total 1 Varieties 1 Set 30

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMX
Type:

Harappa: H-599



Sign # **488** Total 1 Varieties 1 Set 30

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-1133



Sign # **489** Total 1 Varieties 1 Set 30

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMX
Type:

Harappa: H-599



Sign #
490 Total 3 Varieties 1 Set 31

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			
Percent	0.07			

Class: SIM
Type: Oth

Mohenjo-daro: M-129, M-355, M-932



Sign #
491 Total 3 Varieties 1 Set 31

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			1
Percent	0.05			0.19

Class: SIM
Type: Oth

Mohenjo-daro: M-21; Type C-> M-1367
Kalibangan: K-89 (Tag)

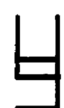


Sign #
492 Total 2 Varieties 1 Set 31

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: MKD
Type: Dia

Mohenjo-daro: M-139, M-648



Sign #
493 Total 1 Varieties 1 Set 31

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-899



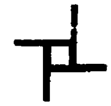
With many varieties

Sign # **494** Total 27 Varieties 6 Set 32

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	15	7	5	
Percent	0.37	0.32	1.39	

Class: SIM
Type: Oth

Mohenjo-daro: M-40, M-42, M-133, M-244, M-425 (Tag), M-636, M-833, M-964, M-965, M-1087; Type C-> M-1053, M-1293, M-1299, M-1320, M-1351
Harappa: H-21, H-386, H-459, H-505, H-611, H-650, H-715
Lothal: L-1, L-2, L-46, L-51, L-89



Sign # **495** Total 1 Varieties 1 Set 32

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: SIM
Type: Oth

Harappa: H-513

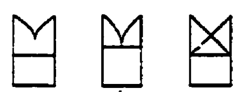


Sign # **496** Total 1 Varieties 1 Set 33

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Enc

Mohenjo-daro: M-812

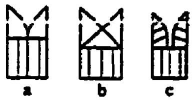


Sign # **497** Total 14 Varieties 3 Set 34

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4	6	1	3
Percent	0.10	0.28	0.28	0.57

Class: SIM
Type: Oth

Mohenjo-daro: a) M-221; b) M-284, M-818; c) M-1115
Harappa: a) H-205 (Bas), H-563, H-811 (Bas), H-890; b) H-774 (Bas); c) H-217 (Bas)
Lothal: b) L-211 (Tag)
Kalibangan: K-15, K-28
Rakhigarhi: Rgr-1



Sign # **498** Total 17 Varieties 1 Set 34

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	7	9		1
Percent	0.17	0.42		0.19

Class: CMX
Type:

Mohenjo-daro: a) M-140, M-736 c) M-34, M-755, M-832; Type C-> c) M-372, M-1271
Harappa: a) H-170 (Bas), H-218 (Bas), H-297 (Inc), H-817 (Bas); b) H-818 (Bas), H-892 (Inc); c) H-216 (Bas), H-441, H-893
Kalibangan: c) K-44



Sign # **499** Total 2 Varieties 1 Set 24

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		2		
Percent		0.09		

Class: MKD
Type: Mir

Harappa: H-890, H-205

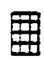


Sign # **500** Total 10 Varieties 1 Set 34.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	8	1		1
Percent	0.20	0.05		0.19

Class: CMX
Type:

Mohenjo-daro: M-61, M-849, M-937; Type C-> M-1272; Copper Tablets-> MacKay: XCIII 9; Marshall: CXVII 8, 12; CXVIII 4
Harappa: H-3
Chanhumjo-daro: C-11

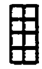


Sign # **501** Total 8 Varieties 1 Set 34.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	5	3		
Percent	0.12	0.14		

Class: CMX
Type:

Mohenjo-daro: M-1101, M-1110; Type C-> M-374, M-1363; Copper Tablets-> Marshall: CXVII 7
Harappa: H-13, H-229 (Bas); Type C-> H-157



Sign # 502 Total 2 Varieties 1 Set 34.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			1
Percent	0.02			0.19

Class: CMX
Type:

Mohenjo-daro: Copper Tablets-> Marshall: CXVII 10
Lohumjo-daro: Lh-1



Sign # 503 Total 1 Varieties 1 Set 34.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	
Percent			0.28	

Class: CMX
Type:

Harappa: H-170 (Bas)
Lothal: L-88



Sign # 504 Total 1 Varieties 1 Set 34.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-627

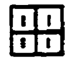


Sign # 505 Total 1 Varieties 1 Set 34.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	
Percent			0.28	

Class: CMP
Type: Att

Lothal: L-86



Sign # 506 Total 6 Varieties 1 Set 34.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	2	1	
Percent	0.07	0.09	0.28	

Class: MKD
Type: Ifx

Mohenjo-daro: M-237; Type C-> M-390, M-1366
Harappa: H-24, H-666
Lothal: L-39

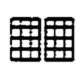


Sign # 507 Total 1 Varieties 1 Set 34.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	
Percent			0.28	

Class: CMP
Type: Att

Lothal: Type C-> L-110

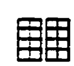


Sign # 508 Total 6 Varieties 1 Set 35

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	4		
Percent	0.05	0.19		

Class: CMP
Type: Dbl

Mohenjo-daro: M-633; Type C-> M-382
Harappa: H-2, H-66, H-72, H-270

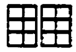


Sign # 509 Total 5 Varieties 1 Set 35

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	5			
Percent	0.12			

Class: CMP
Type: Dbl

Mohenjo-daro: M-4, M-252, M-980, M-1080; Type C-> M-371



Sign # 510 | Total 5 | Varieties 1 | Set 35

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4	1		
Percent	0.10	0.05		

Class: CMP
Type: Dbl

Mohenjo-daro: M-45, M-1335; Type C-> M-400, M-401
Harappa: H-49

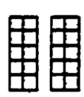


Sign # 511 | Total 5 | Varieties 1 | Set 35

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	5			
Percent	0.12			

Class: CMP
Type: Dbl

Mohenjo-daro: M-981; Type C-> M-383, M-1315; Copper Tablets->
MacKay: CIII 2, 6

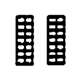


Sign # 512 | Total 2 | Varieties 1 | Set 35

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: CMP
Type: Dbl

Mohenjo-daro: M-81, M-161



Sign # 513 | Total 1 | Varieties 1 | Set 35

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Dbl

Mohenjo-daro: M-25



Sign # **514** Total 1 Varieties 1 Set 35

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Dbl

Mohenjo-daro: M-627

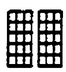


Sign # **515** Total 1 Varieties 1 Set 35

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Dbl

Mohenjo-daro: M-745



Sign # **516** Total 1 Varieties 1 Set 35

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Dbl

Mohenjo-daro: M-884



Sign # **517** Total 18 Varieties 1 Set 35.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	16	2		
Percent	0.39	0.09		

Class: CMX
Type:

Mohenjo-daro: M-154, M-180, M-278, M-295, M-296, M-306, M-310, M-782, M-851, M-882, M-898, M-973, M-1139, M-1141, M-1150, M-1186
Harappa: H-60, H-206(Bas)



Sign # **518** Total 2 Varieties 1 Set 35.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: CMX
Type:

Mohenjo-daro: M-240, M-1273

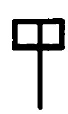


Sign # **519** Total 2 Varieties 1 Set 35.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: CMX
Type:

Mohenjo-daro: M-372, M-390

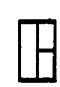


Sign # **520** Total 2 Varieties 1 Set 35.7

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: CMX
Type:

Mohenjo-daro: M-56
Harappa: H-3



Sign # **521** Total 2 Varieties 1 Set 35.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			1
Percent	0.02			0.19

Class: CMX
Type: Mir

Mohenjodaro: M-747
Kalibangan: K-6

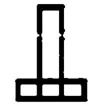


Sign # 522 Total 1 Varieties 1 Set 35.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-331



Sign # 523 Total 1 Varieties 1 Set 35.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: CMX
Type:

Harappa: H-74



Sign # 524 Total 1 Varieties 1 Set 35.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Ifx

Mohenjo-daro: M-952

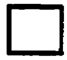


Sign # 525 Total 1 Varieties 1 Set 35.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: Type C-> M-1289

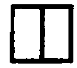


Sign # **526** Total 1 Varieties 1 Set 34.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: SIM
Type: Oth

Harappa: H-682

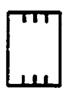


Sign # **527** Total 1 Varieties 1 Set 35.5

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: Type C-> M-1316

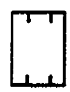


Sign # **528** Total 20 Varieties 1 Set 35.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	10	5		5
Percent	0.24	0.23		0.96

Class: CMX
Type:

Mohenjo-daro: M-8, M-38, M-119, M-266, M-845, M-864, M-1188, M-1221; Type C-> M-359, M-1341
Harappa: H-380, H-381, H-385, H-415, H-645
Kalibangan: K-1, K-14
Chanhunjo-daro: C-32 (But)
Nindowari-damb: Nd-1
Kot-diji: Kd-8 (Pot)



Sign # **529** Total 16 Varieties 1 Set 35.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	9	6		1
Percent	0.22	0.28		0.19

Class: CMX
Type:

Mohenjo-daro: M-36, M-459 (Bas), M-460 (Bas), M-461 (Bas), M-463 (Bas), M-665, M-719, M-921; Type C-> M-396
Harappa: H-102, H-170 (Bas), H-321 (Inc), H-462, H-895 (Inc); Type C-> H-149
Kalibangan: K-13

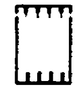


Sign # 530 Total 5 Varieties 1 Set 35.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		5		
Percent		0.23		

Class: MKD
Type: Ifx

Harappa: H-821 (Bas), H-206 (Bas), H-237 (Bas), H-301 (Inc), H-321 (Inc)

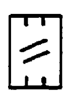


Sign # 531 Total 4 Varieties 1 Set 35.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1	1	2
Percent		0.05	0.28	0.38

Class: CMX
Type:

Harappa: H-28
Lothal: L-45
Bala-kot: Blk-2, Blk-4



Sign # 532 Total 3 Varieties 1 Set 35.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	2		
Percent	0.02	0.09		

Class: MKD
Type: Ifx

Mohenjo-daro: M-41
Harappa: H-360 (Inc), H-966 (Inc)



Sign # 533 Total 2 Varieties 1 Set 35.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: MKD
Type: Ifx

Mohenjo-daro: M-141, M-267

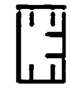


Sign # **534** Total 1 Varieties 1 Set 35.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: M-637

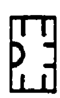


Sign # **535** Total 1 Varieties 1 Set 35.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Ifx

Mohenjo-daro: M-941

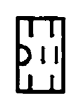


Sign # **536** Total 1 Varieties 1 Set 35.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Ifx

Harappa: H-598

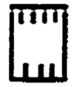


Sign # **537** Total 1 Varieties 1 Set 35.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Ifx

Harappa: H-51



Sign # **538** Total 1 Varieties 1 Set 35.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-1169

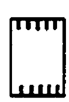


Sign # **539** Total 1 Varieties 1 Set 35.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-1635 (Bng)

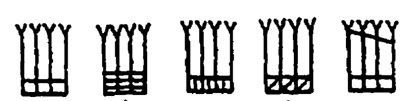


Sign # **540** Total 1 Varieties 1 Set 35.75

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-1103



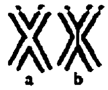
a b c d e

Sign # **541** Total 8 Varieties 5 Set 36

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4	1	2	1
Percent	0.10	0.05	0.56	0.19

Class: CMX
Type:

Mohenjo-daro: d) M-218; Type C-> a) M-402; d) M-1322; Copper Tablets->
d) Marshall: CXVII 14
Harappa: b) H-48
Lothal: a) L-36; e) L-90
Banawali: Type C-> a) B-21

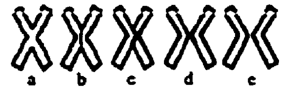


Sign #
542 Total 40 Varieties 2 Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	20	19		1
Percent	0.49	0.88		0.19

Class SIM
Type Oth

Mohenjo-daro: M-38, M- 176, M- 425 (Tag), M- 454 (Bas), M- 626, M- 628, M- 671, M- 682, M- 771, M- 816, M- 857, M- 950, M- 1069, M- 1156, M- 1340, M- 1444 (Inc), M- 1445 (Inc); Type C-> M-369, M- 377; Copper Tablets-> Marshall: CXVII 13
Harappa: H-8, H-12, H-20, H-61, H-209 (Bas), H-236 (Bas), H-278 (Bas) to 284 (Bas), H-321 (Inc), H-580, H-782 (Bas), H-783 (Bas), H-917 (Inc), H-966 (Inc)
Kalibangan: K-10



Sign #
543 Total 36 Varieties 6 Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	17	17	1	1
Percent	0.42	0.79	0.28	0.19

Class SIM
Type Oth

Mohenjo-daro: M-21, M-23, M-26, M-69, M-70, M-134, M-171, M-234, M-626, M-666, M-751, M-994, M-1111, M-1127, M-1181, M-1189, M-1206
Harappa: H-1, H-7, H-56, H-91, H-237 (Bas), H-267, H-300 (Inc), H-360 (Inc), H-363 (Inc), H-423, H-821 (Bas) to H-824 (Bas), H-878 (Bas); Type C-> H-142, H-665
Lothal: L-5, L-199 (Tag)
Banawali: B-21



Sign #
544 Total 36 Varieties 1 Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	19	15	1	1
Percent	0.46	0.70	0.28	0.19

Class SIM
Type Oth

Mohenjo-daro: M-38, M-97, M-425 (Tag), M-488 (PrisTab), M-625, M-626, M-671, M-682, M-816, M-950, M-980, M-993, M-1156, M-1197, M-1206; Type C-> M-369, M-377, M-1340; Copper Tablets-> Marshall: CXVII 13
Harappa: H-12, H-20, H-61, H-278 (Bas) to H-284 (Bas), H-299, H-579 (Bas), H-598 (Bas), H-703 (Bas), H-761 (Bas)
Lothal: L-11
Kalibangan: K-10



Sign #
545 Total 9 Varieties 1 Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	7	2		
Percent	0.17	0.09		

Class MKD
Type Dia

Mohenjo-daro: M-267, M-393, M-629, M-634, M-667, M-1149; Type C-> M-1052
Harappa: H-35, H-421



Sign # 546 Total 3 Varieties 1 Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2	1		
Percent	0.05	0.05		

Class: SIM
Type: Oth

Mohenjo-daro: M-976, M-1415 (Bas)
Harappa: H-424



Sign # 547 Total 2 Varieties 1 Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: MKD
Type: Cgd

Mohenjo-daro: M-61, M-655



Sign # 548 Total 2 Varieties 1 Set 15

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		1
Percent		0.05		0.19

Class: CMP
Type: Dbl

Mohenjo-daro: M-632
Harappa: H-101
Kalibangan: K-45



Sign # 549 Total 1 Varieties 1 Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Mir

Mohenjo-daro: M-189



Sign # 550 | Total 1 | Varieties 1 | Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-57



Sign # 551 | Total 1 | Varieties 1 | Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMP
Type: Att

Mohenjo-daro: M-261



Sign # 552 | Total 1 | Varieties 1 | Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: SIM
Type: Oth

Harappa: H-43

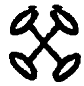


Sign # 553 | Total 1 | Varieties 1 | Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency			1	
Percent			0.28	

Class: CMP
Type: Cnf

Lothal: L-66

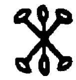


Sign # **554** Total 1 Varieties 1 Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-241



Sign # **555** Total 1 Varieties 1 Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: 112



Sign # **556** Total 1 Varieties 1 Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-949



Sign # **557** Total 1 Varieties 1 Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Brk

Mohenjo-daro: M-79



Sign # **558** Total 1 Varieties 1 Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-68



Sign # **559** Total 1 Varieties 1 Set 37

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Cgd

Mohenjo-daro: M-342



Sign # **560** Total 27 Varieties 1 Set 38

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	7	12		8
Percent	0.17	0.56		1.53

Class: CMX
Type:

Mohenjo-daro: M-28, M-207, M-243, M-258, M-852, M-1141, M-1189
Harappa: H-93, H-183 (Bas), H-612, H-786 (Bas), H-787 (Bas), H-813 (Bas), H-905 (Inc) to H-908 (Inc); Type C-> H-144, H-682
Kalibangan: K-59, K-69 (Bas) to K-75 (Bas)

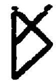


Sign # **561** Total 8 Varieties 1 Set 38

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			7
Percent	0.02			1.34

Class: SIM
Type: Oth

Mohenjo-daro: M-87
Kalibangan: K-69 (Bas) to K-75 (Bas)



Sign # **562** Total 3 Varieties 1 Set 38

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		1
Percent	0.02	0.05		0.19

Class: CMX
Type:

Mohenjo-daro: M-12
Harappa: H-44
Desalpur: Dlp: 3



Sign # **563** Total 3 Varieties 1 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		1
Percent	0.02	0.05		0.19

Class: MKD
Type: Cnf

Mohenjo-daro: M-677
Harappa: H-145
Naushard: Ns-6



Sign # **564** Total 2 Varieties 1 Set 38

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: CMX
Type: Mir

Mohenjo-daro: M-154
Harappa: H-849 (Bas)



Sign # **565** Total 2 Varieties 2 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: CMX
Type:

Mohenjo-daro: M-1111, M-1333



Sign # **566** Total 1 Varieties 1 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-73



Sign # **567** Total 1 Varieties 1 Set 38

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-243

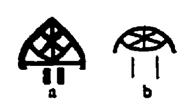


Sign # **568** Total 1 Varieties 1 Set 38

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency				1
Percent				0.19

Class: MKD
Type: Ced

Kalibangan: K-15



Sign # **569** Total 4 Varieties 1 Set 39

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3	1		
Percent	0.07	0.05		

Class: CMP
Type: Mlt

Mohenjo-daro: a) M-633; b) M-1005, M-1101
Harappa: b) H-380 (CpO)



Sign # 570 Total 1 Varieties 1 Set 39

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Dia

Mohenjo-daro: M-18



Sign # 571 Total 65 Varieties 1 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	47	8	3	7
Percent	1.15	0.37	0.83	1.34

Class: CMX
Type:

Mohenjo-daro: M-23, M-44, M-48, M-53, M-59, M-68, M-84, M-105, M-111, M-113, M-136, M-146, M-173, M-292, M-326, M-427 (Tag), M-647, M-709, M-754, M-755, M-768, M-820, M-841, M-854, M-870, M-877, M-966, M-974, M-997, M-1060, M-1078, M-1114, M-1129, M-1165, M-1190, M-1601 (Pot): Type C-> M-356, M-363, M-369, M-380, M-387, M-398, M-1271, M-1280, M-1289, M-1350, M-1360
Harappa: H-7, H-39, H-46, H-89, H-268, H-380 (CO), H-391, H-811 (Bas)
Lothal: L-28, L-190 (Tag); Type C-> L-114
Kalibangan: K-4
Chanhujo-daro: C-3, C-11, C-12, C-15, C-16
Desalpur: Dlp-1



Sign # 572 Total 35 Varieties 1 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	22	10	1	2
Percent	0.54	0.46	0.28	0.38

Class: SIM
Type: Oth

Mohenjo-daro: M-67, M-102, M-119, M-121, M-138, M-157, M-194, M-195, M-834, M-877, M-893, M-937, M-958, M-979; Type C-> M-374, M-384, M-1225, M-1358, M-1368; Copper Tablets-> MacKay: XCIII 3, 5, 14
Harappa: H-25, H-141, H-468, H-472, H-512, H-589, H-927 (Inc) to H- 930 (Inc)
Kalibangan: K-9, K-11



Sign # 573 Total 24 Varieties 1 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	21	2		1
Percent	0.51	0.09		0.19

Class: SIM
Type: Oth

Mohenjo-daro: M-7, M-33, M-124, M-128, M-170, M-171, M-174, M-677, M-720, M-846, M-917, M-945, M-968, M-1153, M-1166; Type C-> M-405, M-407, M-1314, M-1364, M-1438; Copper Tablets-> Marshall: CXVII 11
Harappa: H-32, H-931 (Inc)
Gharo Bhiro: Grb-1



Sign # 574 | Total 17 | Varieties 1 | Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	12	4	1	
Percent	0.29	0.19	0.28	

Class: CMP
Type: Dbl

Mohenjo-daro: M-52, M-307, M-326, M-494 (Bas), M-495 (Bas), M-994, M-1006 Type C-> M-396, M-1292, M-1319; Copper Tablets-> MacKay: CIII 4, 6
Harappa: H-396, H-226 (Bas) to H-228 (Bas)
Lothal: Type C-> L-111



Sign # 575 | Total 7 | Varieties 1 | Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4	3		
Percent	0.10	0.14		

Class: CMX
Type: Mir

Mohenjo-daro: M-239, M-245, M-779, M-1141
Harappa: H-8, H-64, H-161



Sign # 576 | Total 5 | Varieties 1 | Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	4			1
Percent	0.10			0.19

Class: CMP
Type: Dbl

Mohenjo-daro: M-24, M-36, M-133; Type C-> M-354
Kalibangan: K-30



Sign # 577 | Total 3 | Varieties 1 | Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	3			
Percent	0.07			

Class: CMP
Type: Mir

Mohenjo-daro: M-1179, M-1181, M-890



Sign # 578 Total 2 Varieties 1 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		2		
Percent		0.09		

Class: SIM
Type: Oth

Harappa: H-60, H-450

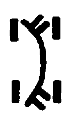


Sign # 579 Total 2 Varieties 2 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	2			
Percent	0.05			

Class: MKD
Type: Att

Mohenjo-daro: Type C-> M-1277, M-1274



Sign # 580 Total 2 Varieties 1 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1	1		
Percent	0.02	0.05		

Class: MKD
Type: Cpd

Mohenjo-daro: M-946
Harappa: H-59



Sign # 581 Total 1 Varieties 1 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Att

Harappa: H-5



Sign # **582** Total 1 Varieties 1 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-210



Sign # **583** Total 1 Varieties 1 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency		1		
Percent		0.05		

Class: MKD
Type: Crd

Harappa: H-79



Sign # **584** Total 1 Varieties 1 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Crd

Mohenjo-daro: M-782



Sign # **585** Total 1 Varieties 1 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: MKD
Type: Att

Mohenjo-daro: Type C-> M-1316



Sign # **586** Total 1 Varieties 1 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: SIM
Type: Oth

Mohenjo-daro: M-843



Sign # **587** Total 1 Varieties 1 Set 40

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	1			
Percent	0.02			

Class: CMX
Type:

Mohenjo-daro: M-136


a.

b.

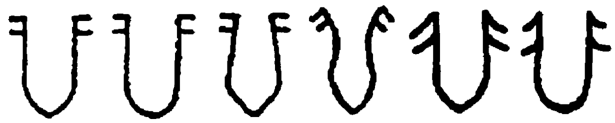
Sign # **588** Total 10 Varieties 2 Set 21

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	10			
Percent	0.24			

Class: CMP
Type: Ifx

see Parpola 1994:111-2

Late addition.



Sign # 288	Mohenjo-Daro	Harappa	Lothal	Other	Total	Set
Frequency	472	291	34	58	855	21
Percent by Site	11.53	13.51	9.44	11.09		

Varieties: 6

Class: CMX

Type:

Mohenjo-daro: M-7, M-12, M-14, M-15, M-18, M-21, M-22, M-23, M-24, M-26, M-28, M-29, M-30, M-31, M-33, M-34, M-35, M-36, M-38, M-41, M-43, M-44, M-46, M-47, M-50, M-51, M-52, M-53, M-56, M-58, M-67, M-68, M-69, M-72, M-78, M-79, M-82, M-84, M-89, M-90, M-91, M-92, M-94, M-98, M-99, M-100, M-101, M-104, M-106, M-107, M-109, M-112, M-113, M-114, M-116, M-118, M-120, M-121, M-124, M-127, M-128, M-130, M-131, M-136, M-138, M-140, M-143, M-144, M-145, M-146, M-148, M-149, M-150, M-152, M-155, M-157, M-159, M-162, M-164, M-165, M-170, M-171, M-173, M-174, M-180, M-182, M-184, M-189, M-194, M-198, M-199, M-200, M-203, M-209, M-211, M-212, M-213, M-217, M-221, M-223, M-228, M-230, M-231, M-234, M-237, M-238, M-239, M-241, M-242, M-245, M-248, M-249, M-255, M-257, M-260, M-263, M-264, M-265, M-266, M-267, M-269, M-274, M-275, M-277, M-280, M-281, M-284, M-286, M-288, M-289, M-291, M-294, M-297, M-300, M-301, M-304, M-306, M-307, M-309, M-310, M-314, M-319, M-320, M-322, M-324, M-326, M-327, M-595, M-625, M-626, M-628, M-629, M-634, M-637, M-638, M-644, M-647, M-646, M-648, M-655, M-665, M-671, M-672, M-677, M-678, M-682, M-683, M-693, M-699, M-700, M-706, M-708, M-709, M-714, M-717, M-720, M-722, M-723, M-727, M-728, M-733, M-735, M-736, M-737 M-738, M-746, M-750, M-754, M-755, M-756, M-758, M-761, M-771, M-780, M-782, M-785, M-786, M-792, M-801, M-808, M-810, M-812, M-814, M-816, M-818, M-823, M-832, M-833, M-835, M-837, M-839, M-846, M-847, M-850, M-851, M-853, M-856, M-857, M-859, M-861, M-862, M-863, M-865, M-866, M-870, M-878, M-879, M-880, M-882, M-889, M-890, M-892, M-893, M-895, M-900, M-903, M-917, M-921, M-926, M-932, M-935, M-933, M-937, M-942, M-943, M-944, M-945, M-946, M-950, M-954, M-953, M-957, M-958, M-963, M-966, M-965, M-968, M-971, M-972, M-979, M-980, M-982, M-986, M-994, M-1001, M-1005, M-1003, M-1006, M-1009, M-1010, M-1015, M-1017, M-1018, M-1019, M-1020, M-1021, M-1027, M-1028, M-1034, M-1045, M-1052, M-1053, M-1062, M-1069, M-1070, M-1071, M-1079, M-1077, M-1085, M-1088, M-1096, M-1100, M-1104, M-1107, M-1108, M-1110, M-1111, M-1112, M-1114, M-1115, M-1119, M-1127, M-1133, M-1135, M-1136, M-1138, M-1139, M-1146, M-1152, M-1153, M-1155, M-1156, M-1163, M-1165, M-1166, M-1168, M-1177, M-1179, M-1181, M-1194, M-1195, M-1202, M-1200, M-1206, M-1221, M-1225, M-1224, M-1233; Bas Relief Tablets-> M-445, M-450, M-453, M-456, M-459, M-457, M-460 to M-469, M-471, M-472, M-473, M-482, M-486 M-492, M-495, M-540, M-1402, M-1406, M-1409, M-1413, M-1412, M-1415, M-1416, M-1418, M-1424, M-1429; Pots-> M-1379, M-1382 M-1577, M-1578, M-1592, M-1591, M-1601; Bangles-> M-1647; Ivory Rods-> M-1650, M-1651; Tags-> M-1383, M-1385, M-1386; Incised Tablets-> M-1438, M-1439, M-1441, M-1442, M-1443, M-1444, M-1445, M-501; Type C-> M-354, M-355, M-357, M-359, M-360, M-362, M-363, M-364, M-369, M-370, M-374, M-375, M-376, M-377, M-380, M-381, M-384, M-388, M-389, M-391, M-392, M-393, M-394, M-397, M-398, M-399, M-405, M-407, M-409, M-1263, M-1264, M-1265, M-1266, M-1267, M-1268, M-1273, M-1276, M-1288, M-1291, M-1294, M-1304, M-1301, M-1306, M-1307, M-1308, M-1310, M-1314, M-1318, M-1321, M-1323, M-1326, M-1328, M-1337, M-1340, M-1342, M-1343, M-1344, M-1353, M-1361, M-1364, M-1366, M-1368; Copper Tablets-> MacKay: CIII 1, 3, 4, 7; XCIII 2, 3, 4, 5, 6, 7, 8, 9, 12, 13, 14; Marshall: CXVII 1, 2, 3, 7, 8, 11, 12, 14, 15; CXVIII 1, 4. Harappa: H-2, H-3, H-8, H-12, H-13, H-14, H-20, H-22, H-23, H-24, H-25, H-26, H-27, H-30, H-31, H-32, H-36, H-37, H-39, H-40, H-42, H-45, H-46, H-47, H-50, H-51, H-56, H-58, H-59, H-60, H-61, H-62, H-63, H-65, H-68, H-69, H-75, H-76, H-79, H-87, H-88, H-101, H-102, H-103, H-268, H-270, H-283, H-286, H-289, H-291, H-401, H-408, H-411, H-417, H-420, H-421, H-432, H-431, H-440, H-441, H-446, H-449, H-451, H-452, H-453, H-454, H-457, H-461, H-462, H-465, H-466, H-468, H-469, H-471, H-472, H-475, H-478, H-479, H-483, H-489, H-502, H-510, H-512, H-515, H-519, H-521, H-523, H-524, H-533, H-537, H-546, H-565, H-563, H-569, H-577, H-580, H-586, H-589, H-592, H-593, H-597, H-598, H-599, H-612; Bas Relief Tablets-> H-171, H-174, H-176, H-178, H-179, H-182, H-187, H-188, H-199, H-200, H-201, H-203, H-204, H-206, H-211, H-216, H-217, H-218, H-229, H-233, H-236, H-245, H-247, H-248, H-250, H-278 to H-284, H-694, H-695, H-696, H-697, H-699, H-705, H-707, H-708, H-723, H-722, H-733, H-734, H-740, H-742, H-743, H-750, H-751, H-752, H-753, H-754, H-755, H-757, H-758, H-763, H-764, H-765, H-767, H-768, H-773, H-782, H-788, H-790, H-800, H-806, H-807, H-808, H-811, H-817, H-818, H-823, H-841, H-844 H-846, H-847, H-848, H-849, H-852, H-854, H-857, H-874, H-877, H-875; Incised Tablets-> H-285, H-287, H-290, H-289, H-291, H-294, H-296, H-298, H-300, H-301, H-302, H-303, H-304, H-305, H-306, H-308, H-309, H-310, H-312, H-313, H-314, H-315, H-316, H-317, H-318, H-321, H-322, H-323, H-325, H-879, H-880, H-890, H-892, H-894, H-893, H-903, H-905, H-918, H-912, H-921, H-924, H-925, H-935, H-936, H-954 H-959, H-960, H-961, H-962, H-964, H-966, H-967, H-969, H-970, H-973, H-975, H-978, H-977, H-984, H-987, H-988, H-341, H-343, H-345, H-350, H-351, H-352, H-353, H-354, H-355, H-356, H-357 H-360, H-361, H-362; Pots-> H-994; Type C-> H-129, H-132, H-133, H-134, H-135, H-137, H-138, H-140, H-142, H-143, H-147, H-150, H-156, H-158, H-161, H-639, H-641, H-645, H-648, H-654, H-656, H-652, H-659, H-661, H-666, H-669, H-668, H-684. Lothal: L-5, L-14, L-22, L-23, L-25, L-26, L-28, L-31, L-46, L-55, L-58, L-56, L-59, L-63, L-64; Type C-> L-95, L-111, L-112, L-122; Tags-> L-140, L-141, L-143, L-149, L-161 to L-170, L-180, L-190, L-189, L-191, L-193, L-205, L-206, L-211; Bas Relief Tablets-> L-217. Kalibangan: K-2, K-9, K-10, K-11, K-13, K-15, K-16, K-17, K-23, K-24, K-43, K-44, K-61, K-62, K-63; Bas Relief Tablets-> K-77, K-78; Tags-> K-81, K-87, K-88, K-89; Pots-> K-90, K-100, K-108, K-106, K-105, K-104; Copper Object-> K-121. Chanhujo-daro: C-1, C-2, C-3, C-5, C-8, C-15, C-17, C-29, C-33. Banawali: B-1. Chandigarh: Ch-1 (Pot), Ch-2 (Pot). Daimabad: Dmd-1 (But). Desalpur: Type C-> Dlp-1. Hulas: Hls-1 (Tag). Jhukar: Jk-2. Khirsara: Krs-2. Lohumjo-daro: Lh-1. Rakhigarhi: Rgr-1. Surkotada: Sktd-2. Allahdino: Ad-1, Ad-4, Ad-6, Ad-8. Gharo Bhiro: Grb-1. Nausharo: Ns-8, Ns-5. Nindowari-damb: Nd-1. Pirak: Pk-1 Unknown: ?-6



Sign # 193

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	278	117	42	44
Percent by Site	6.79	5.43	11.67	8.41

Total 481

Varieties 1

Set 13

Class MKR

Type

Mohenjo-daro: M-4, M-7, M-10, M-12, M-14, M-15, M-17, M-20, M-21, M-24, M-28, M-29, M-32, M-33, M-34, M-35, M-36, M-38, M-40, M-41, M-42, M-43, M-44, M-46, M-47, M-49, M-50, M-52, M-53, M-54, M-57, M-58, M-66, M-70, M-71, M-72, M-75, M-77, M-79, M-81, M-82, M-86, M-90, M-91, M-92, M-95, M-99, M-100, M-101, M-103, M-107, M-109, M-110, M-114, M-115, M-116, M-117, M-118, M-119, M-130, M-140, M-141, M-142, M-143, M-144, M-147, M-152, M-154, M-160, M-164, M-166, M-174, M-175, M-177, M-181, M-198, M-199, M-200, M-204, M-211, M-213, M-221, M-225, M-232, M-235, M-239, M-240, M-242, M-245, M-246, M-248, M-251, M-253, M-258, M-259, M-260, M-267, M-278, M-279, M-280, M-285, M-289, M-308, M-309, M-311, M-316, M-314, M-315, M-318, M-325, M-327, M-329, M-330, M-437 (Bas), M-453 (Bas), M-490 (Bas), M-491 (Bas), M-595, M-623, M-628, M-629, M-636, M-639, M-644, M-650, M-651, M-655, M-653, M-656, M-658, M-665, M-675, M-677, M-678, M-683, M-692, M-699, M-701, M-703, M-706, M-708, M-712, M-713, M-714, M-717, M-720, M-721, M-722, M-723, M-724, M-726, M-727, M-728, M-732, M-735, M-739, M-756, M-762, M-776, M-781, M-783, M-785, M-788, M-792, M-793, M-794, M-795, M-803, M-809, M-813, M-815, M-816, M-819, M-823, M-825, M-827, M-833, M-834, M-835, M-839, M-845, M-849, M-850, M-853, M-855, M-866, M-869, M-872, M-889, M-895, M-897, M-900, M-901, M-902, M-903, M-918, M-934, M-937, M-940, M-941, M-948, M-957, M-958, M-963, M-979, M-982, M-984, M-1002, M-1027, M-1045, M-1062, M-1063, M-1064, M-1082, M-1085, M-1088, M-1089, M-1107, M-1109, M-1110, M-1112, M-1115, M-1119, M-1126, M-1135, M-1136, M-1137, M-1138, M-1139, M-1148, M-1150, M-1152, M-1155, M-1159, M-1160, M-1161, M-1166, M-1169, M-1177, M-1178, M-1188, M-1189, M-1206, M-1226, M-1371 (Pot), M-1381 (Pot), M-1385 (Tag), M-1391 (Bas), M-1426 (Bas); Type C-> M-354, M-355, M-358, M-359, M-362, M-364, M-367, M-375, M-376, M-381, M-384, M-385, M-391, M-393,M-408, M-413, M-1263, M-1267, M-1268, M-1273, M-1284, M-1297, M-1299, M-1306, M-1311, M-1319, M-1341, M-1343, M-1358

Harappa: H-3, H-8, H-12, H-15, H-18, H-13, H-21, H-22, H-31, H-42, H-44, H-45, H-51, H-55, H-60, H-68, H-74, H-78, H-85, H-92, H-506, H-507, H-268, H-272, H-273, H-283, H-285, H-405, H-407, H-408, H-410, H-426, H-444, H-446, H-455, H-456, H-457, H-459, H-461, H-464, H-468, H-476, H-478, H- 501, H-506, H-507, H-514, H-563, H-574, H-593, H-597, H-598, H-600, H-609, H-611, H-612 (Inc), H-688, H-231 (Bas), H-244 (Bas), H-252 to H-276 (Bas), H-697 (Bas), H-702 (Bas), H-701 (Bas), H-719 (Bas), H-773 (Bas), H-811 (Bas), H-844 (Bas), H-859 to H-870 (Bas); Type C-> H-129, H-130, H-131, H-134, H-135, H-137, H-140, H-141, H-149, H-639, H-649, H-651, H-658, H-663

Lothal: L-1, L-4, L-5, L-11, L-12, L-18, L-39, L-41, L-46, L-47, L-57, L-62, L-65; Type C-> L-82, L-83, L-84, L-87, L-89, L-92, L-95, L-112; TAGS: L-130, L-133, L-134, L-136, L-137, L-145, L-162 to L-171, L-196, L-198, L-202, L-208, L-220

Kalibangan: K-2, K-4, K-10, K-12, K-18, K-23, K-24, K-25, K-27, K-28, K-33, K-44, K-78, K-69 to 75 (Bas), K-82 (Tag), K-89 (Tag). Chanhujo-daro: C-1, C-3, C-4, C-5, C-6, C-7, C-10, C-24, C-23

Banawali: B-1, B-5, B-15, B-17

Allahdino: Ad-8

Bala-kot: Blk-1

Nausharo: Ns-5, Ns-9

Dholavira: Dlv-1, Dlv-2

Unknown: ?-5, ?-6.

Jhukar: Jk-2. Lohumjo-daro: Lh-1. Desalpur: Dpl-3



Sign #
112

	Mohenjo-Daro	Harappa	Lothal	Other
Frequency	118	46	8	15
Percent by Site	2.88	2.14	2.22	2.87

Total
187

Varieties
1

Set
8

Class
CMX

Type

Mohenjo-daro: M-23, M-37, M-36, M-38, M-46, M-49, M-52, M-53, M-61, M-65, M-91, M-94, M-108, M-117, M-124, M-130, M-133, M-136, M-140, M-147, M-151, M-154, M-163, M-172, M-174, M-211, M-218, M-221, M-234, M-237, M-240, M-260, M-279, M-304, M-308, M-309, M-319, M-323, M-623, M-627, M-631, M-632, M-634, M-636, M-648, M-650, M-651, M-655, M-661, M-707, M-715, M-720, M-722, M-723, M-726, M-733, M-768, M-856, M-888, M-900, M-914, M-921, M-943, M-967, M-999, M-1020, M-1031, M-1044, M-1052, M-1057, M-1112, M-1121, M-1148, M-1159, M-1169, M-1206; Type C-> M-359, M-375, M-381, M-392, M-395, M-412, M-414, M-1265, M-1275, M-1294, M-1295, M-1312, M-1329, M-1330, M-1350, M-1362; Bas Tablet: M-446, M-453, M-464 to M-469, M-1426, M-1427, M-1429, M-1439 to M-1442; Copper Tablets->MacKay: XCIII 1, 2, 4, 5, 6, 7, 11; Marshall: CXVIII 5

Harappa: H-4, H-9, H-12, H-18, H-20, H-68, H-82, H-85, H-92, H-103, H-320 (Inc), H-364 (Inc), H-268, H-270, H-385, H-396, H-401, H-412, H-423, H-514, H-525, H-569, H-581, H-592, H-601, H-609; Bas Tablets-> H-203, H-230, H-278 to H-284, H-747, H-748, H-761, H-767, H-789, H-807, H-815; Type C-> H-128, H-133, H-134, H-640, H-669

Lothal: L-66, L-87, L-98, L-114, L-143 (Tag), L-208 (Tag), L-211 (Tag), L-219 (Tag). Kalibangan: K-7, K-8, K-9, K-15, K-25, K-32. Chanhujo-daro: C-10, C-13, C-33, C-38 (CO). Banawali: B-1, B-3. Pabumath: Pbm-1 Nindowari-damb: Nd-1. Nausharo: Ns-5